STEEL

PRODUCTION

PROCESSING

DISTRIBUTION

USE

EDITORIAL STAFF

E. L. SHANER
Editor

ASSOCIATE EDITORS

E. C. BARRINGER — E. F. ROSS
A. J. HAIN — J. D. KNOX
G. H. MANLOVE — A. H. ALLEN
E. A. FRANCE JR. — GUY HUBBARD

New York
E. C. KREUTZBERG — B. K. PRICE
L. E. BROWNE

Pittsburgh — *Chicago*
W. G. GUDE — F. B. PLETCHER

Washington — *London*
L. M. LAMM — VINCENT DELPORT

ADVERTISING STAFF

G. O. HAYS
Business Manager

New York
J. F. AHRENS — E. W. KREUTZBERG

Pittsburgh
S. H. JASPER — C. B. HUMPHREY

Chicago
L. C. PELOTT — C. A. WARDLEY

Cleveland
JOHN HENRY — R. C. JAENKE

F. F. LIGHT, *Circulation Manager*

CONTENTS

February 8, 1932

THE WEEK IN STEEL 17

Japan To Smelt Manchurian Ore for Chinese Market? 19
Steel Ingot Daily Rate Improves in January 20
Business News from Washington 20
Blast Furnaces Show First Increase in Ten Months 21

Industrial Men in the Day's News 22
Obituary 23
Mirrors of Motordom 24
Here and There in Industry 25

EDITORIAL—Steel Industry Can Help To Curb Hoarding 26
THE BUSINESS TREND 27

Continuous Manufacture of Welded Conduit 31
Testing Machine Will Exert 4,000,000-Pound Pressure 34
Rivet Manufacture Keeps Step with Fabricating Progress 35
New Product Broadens Field for Malleable Iron 36
Progress in Steelmaking 38
Large Uses of Steel in Small Ways—Door Closets 40
Scanning the Technology of Steel 42
New Equipment 43

MARKET REPORTS AND PRICES 47-63
CONSTRUCTION AND ENTERPRISE 64
TRADE PUBLICATIONS 65
WHERE-TO-BUY DEPARTMENT 67
ADVERTISERS' INDEX 84

STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Alto building; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse 64a, Germany. Subscription in the United States, Canada, Cuba and Mexico $6 per year; in Great Britain and European countries £2:8s.

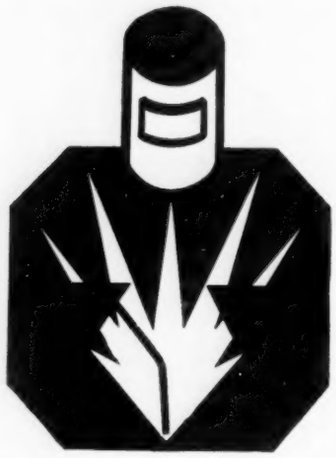
Entered as second class matter at post office at Cleveland under the Act of March 3, 1879.

Copyright 1932 by the Penton Publishing Co.

NOW

MUREX

BRINGS A NEW CONTROL TO WELDING

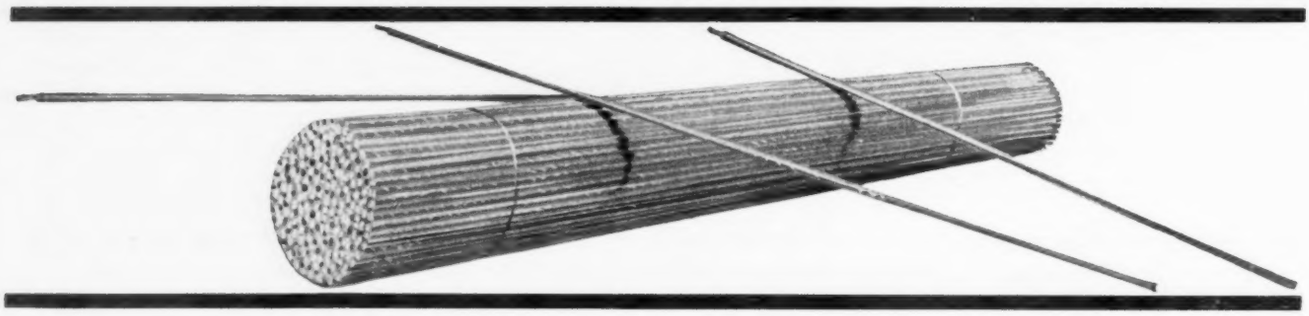


Are uncertainties a source of trouble in your welding? If they are, then you will welcome the new control which Murex Heavy Mineral Coated Electrodes bring to the welding operation. ¶ Murex Electrodes largely shift the responsibility for obtaining good results from the experienced operator, who has always shouldered it, to the electrode, where the responsibility belongs if welding is to be another dependable production operation. ¶ Murex control results from the action under the arc of the unique, heavy all-mineral coating on a Murex Electrode—an action, which through exacting care in manufacture, is always uniform in every Murex Electrode of the same type. ¶ Murex control gives the operator a "break". With a Murex Electrode, the operator easily holds a short, quiet arc by "riding" the electrode on the work. The heavy mineral coating both shields and spaces the arc, and there is an even, maximum deposit. Less metal is lost through vaporization and spattering. There are no objectionable fumes or smoke. And weld metal of unsurpassed strength and ductility is always deposited in a clean, round fillet or a smooth, flat bead, free from under-cutting. ¶ Murex Electrodes are made in 18-inch lengths in a number of types . . . for welding commercial mild steel, manganese steel, 18-8 stainless, and other metals. Write for complete details . . . promptly sent on request.

METAL & THERMIT CORPORATION
120 BROADWAY, NEW YORK, N. Y.
ALBANY • PITTSBURGH • CHICAGO • SOUTH SAN FRANCISCO

M U R E X

HEAVY MINERAL COATED ELECTRODES



Murex Electrodes are made in the United States by the American Murex Corp. and are sold only by the Metal & Thermit Corp., pioneers of welding and manufacturers of Thermit. Literature on Thermit welding for many kinds of heavy work sent on request.

Volume 90 Number 6

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

IF ECONOMIC pressure is responsible for the overflow of Japan into China, iron and steel may supply the link connecting the conquest of Manchuria late last year with the thrust at Shanghai. Her silk worms victims of technological unemployment aggravated by rayon, Japan has been forced to develop new industries, seek new markets, for her energetic ninety millions. In Manchuria are the largest iron ore deposits of the Far East; in China are 400,000,000 persons forming the world's greatest potential market for iron and steel; on the rim of this vast yellow reservoir is Japan (page 19). Already the red ore of Manchuria is hers; a submissive yellow China would assure her role of converter.

Fashion Oriental Diplomacy from Steel

No matter if checked in the present hostilities, Japan is expected to bore in with oriental persistence. At the moment, the movement of iron and steel products from the United States to Shanghai has been retarded slightly (page 20); the future of the Sino-Japanese market which in 1931 absorbed 15 per cent of all the iron and steel exported by the United States is in the balance. With soviet Russia tireless in expanding her iron and steel industry—perhaps significantly more toward the Urals than the Baltic—and Japan corralling the valuable iron ore of the Far East, steel becomes a greater world force than gold.

Steel Plentiful, Hoover Prefers Gold

But President Hoover is not averse to having a little more gold in free circulation as a stimulus to business, and has initiated a drive, bearing some of the earmarks of Liberty loan campaigns, to end hoarding (page 20). This would put greater force behind the Reconstruction Finance Corp., now functioning. In the saving of $210,000,000 in the railroad wage bill for the coming year Washington envisages transportation strengthened. Another constructive proposal, to suspend the antitrust laws temporarily for "natural resource" industries, is before the senate (page 20), but the sniping at big business continues with a demand for investigation of prices of farm equipment.

Markets Lose Momentum, but Hold

Lacking seasonal requirements of the railroads for track material and with the automobile industry extended as far as possible without the support of Ford, the steel markets have come to rest on dead center (page 47). For two weeks steelmaking operations have been pegged at 28½ per cent (page 55); indi-

Courtesy, Caterpillar Tractor Co., Peoria, Ill.

China has been showing more interest recently in mechanized road building than in preparations for war. Its first "road show" last September in Shanghai, now a "war zone", featured American-built tractors and automobiles

"Pouring", a photographic idealization of steel by Margaret Bourke-White, is one of a beautiful brochure issued by the Ludlum Steel Co., Watervliet, N. Y., commemorating its seventy-fifth anniversary

cations are this rate will also hold this week. Favorable factors, however, are ascendant. January output of steel ingots, at 56,203 tons daily (page 20), developed a 12 per cent gain over December. A decline of 0.9 per cent in the pig iron rate in January is more than neutralized (page 21) by the first increase in 10 months in active blast furnace stacks. . . . British steelmakers expect to recoup some domestic markets from the 10 per cent tariff agreed upon (page 62) in the Kingdom's retreat from free trade. . . . Happy days also appear ahead of automobile service stations (page 24) as the trend to gadgetry in 1932 models makes cars more delicate.

Employes Get Chance To "Average Down"

For the United States Steel Corp. to proceed with its installment sale of common stock to employes, considering the shrinkage in value of offerings of the past few years, is a striking display of confidence, an earnest that the Taylor management will continue the tradition of employe participation. Two hundred thousand shares are available (page 21) for the 1932 distribution at $40, lowest price since the plan was inaugurated in 1909. . . . As more financial reports for 1931 are issued (page 25) the reason for such shrinkage becomes plainer. Of the major steel producers reporting thus far, only one earned its common dividend in 1931, but when related to tonnage the economies effected through wage and salary reductions in the fourth quarter proved a mitigating influence.

Labor Can Also Take the Bitter

Labor is doing more than sharing the losses of capital; it has been taking its reduced income without grousing. Government statistics disclose (page 25), for example, that hourly wage rates at sheet mills last year averaged 74.7 cents, or 4.6 cents below 1929, while the full-time weekly average earning in 1931 was only $35.71, compared with $52.26 in 1920. At tin plate mills, reductions have been proportionate. . . . Sheets have come into a new use by enlarging the functions of doors. An ingenious combination of sheets and strip transforms (page 40) a door into a closet, or closidor, as it is termed, and about 250 tons is being added to the country's annual consumption.

Rivets, Unselfish, Trade Weight for Service

Several decades ago rivets accounted for 7 per cent of the weight of a steel structure; today for a scant 3 per cent (page 35), due to the new lighter weight structural sections requiring fewer rivets and to the development of high strength rivets. . . . No simple life is the lot of rivets in a new testing machine completed recently for shipment to California. A pressure of 2000 tons on a specimen in compression and 1500 tons in tension is the appetite of this behemoth (page 34), believed to eclipse all other machines of this type. . . . Only the pressure of drastic competition would prompt western lines, after fighting for increased rates and decreased wages, to propose (page 59) lower tariffs from Chicago to the Twin Cities and Duluth.

Skelp to Conduit by Continuous Process

An eastern manufacturer of steel conduit reports advantages in a continuous arrangement (page 31) whereby coils of skelp are welded ended to end, passed through a long heating furnace, then through forming rolls, welding rolls where the edges are butt welded, sizing rolls and a traveling hot saw. . . . Shortening and cheapening of the production cycle of wire from the lime baths to the draw benches has been accomplished (page 38) by one maker through the use of ovens heated by an indirect system. . . . Malleable founders visualize wider markets from introduction (page 36) of a special type iron, with higher average ultimate strength and yield point although somewhat lower ductility than standard malleable iron.

Japan To Smelt Manchurian Ore for Chinese Market?

IN MANCHURIA, over which Japan has extended her control, are deposits of iron ore, largest in the Far East, aggregating 738,000,000 metric tons and averaging 34 to 36 per cent iron.

In China, teeming with a population of 400,000,000, is what many appraise as the greatest potential market in the world for iron and steel products, little ore, practically no production.

Between is Japan—restless, increasingly industrial, seeking an outlet for the energies of her people, more attentive to her iron and steel industry since the expansion of the rayon industry has greatly curtailed demand for raw silk.

See Answer to Aggression

Here may be the explanation of the policy which has motivated Japan, first in ousting Chinese authority from Manchuria and second in her economic penetration of China via Shanghai and Nanking, lately by means scarcely distinguishable from war. This penetration is expected to survive any settlement of the present difficulty and to be a continuing policy.

For all her 400,000,000 population China has only 17 blast furnaces, ranging in individual capacity from 12 to 500 tons, having a combined annual capacity of 1,127,000 tons. Seven of these furnaces, with an annual capacity of 475,000 tons, are Japanese controlled and have been practically the only furnaces in operation recently.

Japan in Steel Business

By way of comparison, the United States with a population of about 124,000,000 lists 298 potential blast furnaces with a total annual capacity of about 51,000,000 tons. Japan and her 90,000,000 population had, in 1929—the latest date for which official government statistics are available—40 blast furnaces with an annual capacity of 1,590,000 tons, of which government-controlled works accounted for over 50 per cent.

There are in China a number of small, primitive smelters, rated at about 180,000 tons annually, supplying crude iron for cart tires, ploughshares, vessels for temples, and similar uses. Hand labor, delivery of ore and charcoal by bucket, is the rule.

China may be divided into three districts for her production of iron—Hankow, 585 miles up the Yangste river from Shanghai; Peking and Manchuria. The Japanese controlled portion of the industry is that credited in the accompanying table to Anshan and Penchihu.

China proper boasts an attenuated steel industry. At Han-Yang are 7 open-hearth furnaces of 30 tons capacity and at Pootung 2 furnaces of 15 tons each. Latest advices are that these furnaces have not been in production recently. At government arsenals are a few small open-hearth and electric furnaces, used for the manufacture of war material.

Japan's steel industry in 1929, according to a government report, consisted of 100 open-hearth furnaces with an annual capacity of 2,320,500 tons. Bessemer capacity is used only for castings and is rated at 30,000 tons annually.

For 1931 Japan's output of steel ingots and castings is estimated by STEEL's London representative at 1,800,000 tons, compared with 2,203,000 tons in 1930 and 2,249,000 tons in 1929, which was the record.

Resources Over-rated

China was long supposed to be fabulously rich in iron ore, so much so that Capt. Robert Dollar, head of the Dollar Steamship Co., who was credited with knowing more about China than any other living American, said in 1927: "I firmly believe the Yangste river valley will yet be the greatest steel producing center in the world."

In more recent years, however, it has been determined that China's resources are not sufficient for the building of a great iron and steel industry. C. K. Leith, eminent American geologist, has estimated the amount of immediately-available Chinese ore of good commercial grade, not requiring concentration and not handicapped by remoteness from transportation, at about 100,000,000 tons, less than two years' supply for the United States.

The most liberal estimates credit China with a billion tons of "actual" iron ore, that is usable as mined, or easily rendered usable, and 355,000,000 tons of "potential," low-grade mate-

Blast Furnaces in China

(Iron and Coal Trades Review)

Place and Owner	No. and size of furnaces. Tons	Annual capacity. Tons
Han-Yang, Han-Yeh-Ping Co.	2 of 75 2 of 250	230,000
Ta-Yeh, Han-Yeh-Ping Co.	2 of 400	280,000
Hankow, Yangtse Eng. Wks.	1 of 100	36,000
Penchihu, Penchihu Co.	2 of 20 2 of 140	115,000
Anshan, S. Manchuria Rly.	2 of 250 1 of 500	360,000
Peking, Lung-Yen Co.	1 of 250	90,000
Pootung, Wou-Ching Co.	1 of 12 1 of 33	16,000
Total		1,127,000

Courtesy, Iron and Steel Division, Department of Commerce

TWO OF CHINA'S 17 BLAST FURNACES: This is the Han-Yeh-Ping Co.'s plant at Ta-Yeh, among the most modern in that country, having been built since the World war. Each of the stacks has capacity for producing 400 tons of pig iron per day

rial which some day may be useful. In contrast, the United States is credited by the same authorities as having more than 10,000,000,000 tons "actual" ore—ten times more than China—and 84,000,000,000 tons "potential."

Japan's total resources in iron ore are estimated at 85,000,000 tons. Because of her lack of iron ore Japan has had to turn to China, and has acquired a controlling interest in some of the largest Chinese deposits. Of the Chinese ore production, amounting to about 1,000,000 tons annually, Japan controls approximately 90 per cent. Japanese interests have spent large sums in attempting to concentrate certain iron ores in China, with doubtful commercial success.

In 1931, when exports of iron and steel products from the United States totaled 965,268 gross tons, China took 38,342 tons, Hong Kong 7998 tons, Kwantung 1360 tons, and Japan 99,045 tons. Thus the warring countries bought 15 per cent of all American iron and steel exports last year.

Iron and steel products moving into Shanghai from all nations in the first half of 1931 totaled 127,042 gross tons, compared with 100,073 tons in the first half of 1930. Principal items, in gross tons, included: Bars, 28,704; bar croppings and bar ends, 15,228; tinned plates, plain, 14,450; pig iron and kentledge, 11,677; sheets and plates, 9396; plate cuttings, 7240; angles, 5611; cobbles, 4623; nail rods, 4606; plain sheets, 4348; pipes and tubes other than cast iron, 4253; wire and cut nails, 2146; wire, 2058; hoops, 1503; wire shorts, 1454; joists and girders, 1189; corrugated sheets, 998.

Shanghai Holds Back Iron And Steel Shipments

NEW YORK—First reaction of the Sino-Japanese disturbance at Shanghai on the American iron and steel industry has developed through several requests for suspension of shipments to that port.

To date, no actual cancellations are reported. With iron and steel products usually sold delivered steamer, American port, there has, however, been a fast increasing demand for war risk insurance.

It is assumed that foreign producers, who have made capital of the slide from the gold standard, are suffering more from suspensions and cancellations than American interests. It is not believed there are large stocks of American steel at Shanghai or other leading ports of China.

Over the past few weeks specifications from China have been declining, but usually January is a lean month inasmuch as the Chinese New Year holidays, beginning early in February, slow down trade.

So far as is known in New York, neither China nor Japan has placed what could be construed as war orders. It develops, however, that in the first 11 months of 1931 Japan took 16,348 tons of lead from the United States, or 82 per cent of all exports. Antimony, which is largely shipped through Shanghai, has risen sharply in price the past few days.

American sellers of iron and steel assert that the last flurry in Japanese buying came at the time when it appeared imminent that Japan would go off the gold standard, with accompanying depreciation in the value of the yen. It was largely a speculative movement, which appeared to have no direct relation to the country's military operation on the Asiatic mainland.

Steel Ingot Daily Rate Improves in January, Crossing 26 Per Cent

STEEL ingot production snapped back in January from the extreme low of December. On a daily basis, January output was 56,203 gross tons, compared with 50,092 in December. Calculated monthly total in January was 1,461,290 gross tons, compared with 1,302,393 tons in December and 2,458,689 tons in January, 1931. Relating production to capacity, January was a 26.54 per cent month. In December the industry was engaged 23.58 per cent, while the average for all 1931 was 37.69 per cent, according to the American Iron and Steel institute.

Steel Ingot Production—1931-32

95.21 Per Cent of Industry Reporting
Gross Tons

1931	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
May	2,083,833	301,639	2,385,472	2,505,485	26	96,365	45.36
June	1,730,109	246,365	1,976,474	2,075,910	26	79,843	37.58
July	1,570,776	225,030	1,795,806	1,886,153	26	72,544	34.15
Aug.	1,462,469	174,631	1,637,100	1,719,462	26	66,133	31.13
Sept.	1,274,321	199,151	1,473,472	1,547,602	26	59,523	28.02
Oct.	1,320,158	195,943	1,561,101	1,592,376	27	58,977	27.76
Nov.	1,276,906	240,441	1,517,347	1,593,684	25	63,747	30.01
Dec.	1,069,468	170,546	1,240,014	1,302,399	26	50,092	23.58
Total	20,697,582	3,009,894	23,707,476	24,900,195	311	80,065	37.69
1932							
Jan.	1,230,661	160,633	1,391,294	1,461,290	26	56,203	26.54

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

The Business Week In Washington

PENDING a congressional investigation of the necessity for revising antitrust laws, "natural resource" industries would be permitted to regulate competition in an effort to stabilize employment, under a bill by Senator Steiwer, of Oregon.

□ □ □

A resolution by Rep. Withrow, of Wisconsin, calls upon the federal trade commission to investigate prices of agricultural implements and machinery.

□ □ □

With the Reconstruction Finance Corp., the President's $2,000,000,000 business relief agency, now functioning, the administration's energies are being put behind a drive to put an end to hoarding and restore to circulation about $1,300,000,000.

□ □ □

Conditioned, first, that the railroads withdraw their formal demand for a 15 per cent reduction, and second, that the roads "try to maintain and increase employment," a 10 per cent railroad wage reduction af-

fecting 1,500,000 men took effect Feb. 1. Lines dealing with company unions are making the same agreement as lines treating with the brotherhoods.

Steel Corporation Offers Employes Stock at $40

Forty dollars a share is the price named by the United States Steel Corp. on 200,000 shares of common stock it has set aside for sale to employes this year. This is the lowest figure at which employes have had an opportunity to buy. In 1909, when common stock was first offered, the price was $50. Last year employes subscribed for 126,627 shares at $140; in 1929 for 98,266 shares at $169, the record price; and in 1929, for 83,079 shares at $165. The largest subscription was in 1921 when 255,325 shares were sold at $81.

An employe receiving $1259 annually or less may not subscribe for more than one share. The amount purchasable is graded according to his pay. An employe receiving $36,750 may subscribe for as many as 14 shares. Prior to completion of payments, dividends are credited on payments, and in addition there are extra cash allowances for employes who retain their stock 5 years.

Navy To Buy Bars, Wire

Washington—Navy department, bureau of supplies and accounts, closes bids Feb. 16 on 64 tons of flat steel for Mare Island, Calif., and on magnet wire for eastern and western yards.

JANUARY IRON PRODUCTION

	No. in blast Last day of month Jan.	Dec.	Total tonnage made Merchant	Nonmerchant
Ohio	15	11	10,198	217,742
Pennsylvania	16	16	20,278*	210,426
Alabama	6	6	28,877	61,247
Illinois	6	6	52,475	68,425
New York	6	6	53,263	26,734
Colorado	1	0		
Indiana	5	5		
Maryland	2	2	187	152,658
Virginia	0	0		
Wisconsin	0	0		
Kentucky	0	0		
Massachusetts	0	0		
Tennessee	0	0		34,770
Utah	1	1		
West Virginia	1	2		
Michigan	2	2		
Minnesota	0	0	15,603	7,304
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	†	11,250
Total	61	57	180,881	790,556

*Includes spiegeleisen and ferromanganese. †Included in Pennsylvania.

Active Blast Furnaces Show First Increase in 10 Months

ALTHOUGH four more blast furnaces were added to the active list in January, the output of coke pig iron was slightly less than in December, this being a reflection of the loss of 10 furnaces in December and reduced operating schedules of numerous stacks. The decrease of only 0.9 per cent for both total output and average daily rate, however, was by far the smallest of any month during the nine consecutive months of contraction.

For the first time since 1921, production in January failed to show gain over December. Total output in January was 971,437 gross tons, which, compared with the 980,377 tons of December, was a loss of 8940 tons. The figure was still the lowest since the 954,901 tons of August, 1921, and is well above the all time low point of 864,642 tons of July, 1921. Production in January, 1931, amounted to 1,715,443 tons.

AVERAGE DAILY PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	.....	61,114	101,640	114,942
Mar.	.....	65,448	104,930	119,662
Apr.	.....	66,986	106,371	122,106
May	.....	64,355	104,564	125,753
June	.....	54,599	97,817	123,837
July	.....	47,170	85,110	122,016
Aug.	.....	41,264	81,455	120,845
Sept.	.....	38,947	75,893	116,548
Oct.	.....	37,831	69,851	115,747
Nov.	.....	36,727	62,182	106,081
Dec.	.....	31,625	53,732	91,513
Ave.	31,336	50,035	86,141	115,808

The average daily rate in January was 31,336 gross tons and, against the 31,625-ton rate of December, the loss of 289 tons was almost negligible. The rate was the lowest since the 30,802 tons of August, 1921, and was 3444 tons above the lowest rate of all-time of 27,892 tons in July, 1921. The average daily production for January, 1931, was 55,337 tons.

Relating production to capacity, the rate of operation for January was 21.8 per cent, compared with 22.0 per cent in December and 25.5 per cent in November.

Blast furnaces operating on Jan. 31 totaled 61, a gain of 4 over the 57 active on Dec. 31. January was the first month since last March to show increase in the number of active units; on the last day of March 116 were producing iron.

During the month, 7 furnaces were blown in and 3 were blown out or banked. Of the merchant class, 2 were blown in and 1 was blown out, with a gain of 1 unit. Of the nonmerchant or steelworks class, 5 were blown in and 2 blown out, with a gain of 3 units.

Furnaces resuming operations in January were: In Ohio: Haselton No. 3, Republic Steel Corp.; Trumbull Cliffs, Trumbull-Cliffs Furnace Co.; Ohio No. 2, and one Mingo, Carnegie Steel Co. In Pennsylvania: Neville Island, Davison Coke & Iron Co. In New York: Standish, Chateaugay Ore & Iron Co. In Colorado: One Minnequa, Colorado Fuel & Iron Co.

Furnaces blown out or banked were: In Pennsylvania: Carrie No. 7, Carnegie Steel Co. In New York: Port Henry, Witherbee-Sherman Co. In West Virginia: Riverside, Wheeling Steel Corp.

In the Jan. 4 issue of STEEL, page 184, was announced the intention of Bethlehem Steel Co. to demolish furnaces C and H at its Lackawanna plant. It is now revealed that only furnace C was abandoned. In addition the company is abandoning its Cambria D furnace at Johnstown, Pa., and the two Coatesville furnaces A and C at Coatesville, Pa. Thereby, the total number of potential furnaces in the United States has been reduced to 298.

MONTHLY PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	.....	1,711,192	2,845,937
Mar.	.....	2,028,906	3,252,822
April	.....	2,009,582	3,191,119
May	.....	1,995,001	3,241,477
June	.....	1,637,998	2,934,508
July	.....	1,462,270	2,638,441
Aug.	.....	1,279,205	2,525,105
Sept.	.....	1,168,436	2,276,781
Oct.	.....	1,172,781	2,165,374
Nov.	.....	1,101,820	1,865,458
Dec.	.....	980,377	1,665,715
Total	971,437	18,263,011	31,441,488

RATE OF OPERATION
(Relation of Production to Capacity)

	1932[1]	1931[1]	1930[2]	1929[3]
January	21.8	38.4	65.0	79.0
February	.....	42.5	72.1	82.2
March	.....	45.4	74.5	85.5
April	.....	46.5	75.4	87.4
May	.....	44.7	74.2	89.8
June	.....	37.9	69.3	88.5
July	.....	32.7	60.3	87.2
August	.....	28.7	57.8	86.4
September	.....	27.0	53.8	83.3
October	.....	26.3	49.6	82.6
November	.....	25.5	44.1	75.8
December	.....	22.0	38.1	65.5

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

Industrial Men in the Day's News

Franklin H. Fowler, President, Foote Bros. Gear & Machine Co., Chicago

HIS first position was with the American Bridge Co. in 1913, following a 4-year service in the United States navy.

FORMERLY affiliated with John Deere Co. and Edwards Valve Co., he was more recently president of the Construction Machinery Co.

HE now has been named president of the Foote company to succeed James F. Griswold.

FRANKLIN H. FOWLER, who as noted in STEEL of Jan. 25 as having been elected to the presidency of Foote Bros. Gear & Machine Co., Chicago, brings to his new position a well balanced business experience embracing the various branches of sales, manufacturing, engineering, administration and finance.

Born in 1887 at Sundance, Wyo., Mr. Fowler obtained his preliminary education in the public schools, and after graduation entered the United States Naval academy, Annapolis, Md. He was graduated from the Naval academy with the class of 1909. For the next four years Mr. Fowler served in the navy, resigning in 1913 to enter the industrial field.

Like many successful executives, Mr. Fowler started at the bottom and took a job with the American Bridge Co., Pittsburgh, at apprentice wages.

From that time he has progressed step by step through the plants of John Deere Co. at East Moline, Ill., and the Edwards Valve Co., East Chicago, Ind., where in the latter by 1917 through hard work and application he had earned the position of factory superintendent.

In 1917, when the United States entered the World War, Mr. Fowler resigned his position to offer his services to the United States navy, serving as lieutenant commander until after the armistice.

After the war he returned to the Edwards Valve Co., as salesman. Before long his sales record began to attract the notice of his superiors and in the next step he was appointed sales manager.

For the past two years Mr. Fowler has been president and general manager of the Construction Machinery Co., Waterloo, Iowa.

He will be supported in his new position with the Foote company by W. A. Barr, Francis A. Emmons and H. H. Bates, vice presidents; A. L. Gray, secretary and treasurer; and J. R. Fagan, assistant treasurer.

J. F. MEHLHOPE, formerly Chicago district sales manager for Central Alloy Steel Corp., Massillon, O., and later for Newton Steel Co., Monroe, Mich., has joined the sales force of the Chicago Steel Service Co., warehouse distributor for Toncan iron and stainless steel products of Republic Steel Corp., Youngstown, O.

□ □ □

C. W. Heppenstall, president of the Heppenstall Co., Pittsburgh, was recently elected president of the Forging Manufacturers' association at its annual meeting in New York.

□ □ □

Karl G. Keck has been appointed sales engineer at Pittsburgh for Cincinnati Milling Machine Co., Cincinnati, and Cincinnati Grinders Inc., Cincinnati. Mr. Keck has devoted most of his time recently as a plant specialist on roll grinding in the Pittsburgh district.

□ □ □

W. F. Beall, formerly vice president in charge of manufacturing, Packard Motor Co., Detroit, has been elected vice president and a member of the executive committee of Continental Motors Corp., Muskegon, Mich. His early experience was with Brown & Sharpe Mfg. Co., Providence, R. I., and he was identified with the Packard company for many years.

□ □ □

Charles F. Scherrer, Davenport Foundry & Machine Co., Davenport, Iowa, is chairman of the newly organized Quad City chapter of the Gray Iron Institute Inc., Cleveland. A. C. Ziebell, Universal Foundry Co., Oshkosh, Wis., is chairman of the new Milwaukee chapter of the institute.

□ □ □

E. T. Barron, metallurgist, and J. O. Leech, manager, bureau of inspection and tests of the metallurgical department of the Carnegie Steel Co., Pittsburgh, have both been advanced to the position of assistant metallurgical engineer. G. Elkins Knable, metallurgist in the metallurgical department of the company, has been appointed manager, bureau of inspection and tests, in this department.

□ □ □

R. F. Devine Jr., Erie Forge Co., Erie, Pa., was named a vice president

of the association, as was C. E. Wilder, Naional Forge & Ordnance Co., Irvine, Pa.

□ □ □

Theodore Johnson has been re-elected president of the Johnson Metal Products Co., Erie, Pa. All other officers were also re-elected at the company's recent annual meeting.

□ □ □

William H. Baumes has retired as treasurer of the Worthington Pump & Machinery Corp., Harrison, N. J., and has been succeeded by Charles N. Barney, who becomes secretary and treasurer.

□ □ □

Boniface A. Miller, former metallurgist with Bartlett-Hayward Co., and American Hammered Piston Ring Co., both of Baltimore, has been made metallurgical engineer, James J. Lacy Co., Baltimore.

□ □ □

John W. Johannessen, for ten years in the structural steel division of Minneapolis-Moline Power Implement Co., Minneapolis, has opened his own office at 200 Sexton building, Minneapolis.

□ □ □

J. E. Maclaren has been appointed manager of the Birmingham, Eng., office of Buck & Hickman Ltd., London, engineers. Mr. Maclaren has acted in the capacity of specialist in Brown & Sharpe machine tools in the London office.

□ □ □

M. I. Dorfan has been appointed manager of the dust collector division of Blaw-Knox Co., Pittsburgh. He was formerly manager of the dust collector division of the Pangborn Corp., Hagerstown, Md., and prior to that served in a like capacity for Allis-Chalmers Mfg. Co., Milwaukee.

□ □ □

A. J. Sanford, formerly with Timken Roller Bearing Co., Canton, O., has been elected a vice president of the Cleveland Hardware Co., Cleveland. Prior to his association with the Timken company, Mr. Sanford was identified with Marion Steam Shovel Co., Marion, O., and the Huber Mfg. Co., also of Marion.

□ □ □

Fred Baskerfield, manager of the railway division, western territory, for Crucible Steel Co. of America, New York, has retired.

Fred T. Conner, for the past eight years district sales manager at Chicago for the Pittsburgh Crucible Steel Co., Pittsburgh, has succeeded Mr. Baskerfield at Chicago.

□ □ □

Clarence E. Searle, until recently general representative in charge of sales for Allis-Chalmers Mfg. Co., West Allis, Wis., has been appointed vice president in charge of sales for Worthington Pump & Machinery Corp., Harrison, N. J. C. E. Wilson, for the past nine years general sales manager, has been appointed vice president in charge of industrial relations for the Worthington company.

□ □ □

H. P. Evans, for the past two years chief metallurgist, Hubbard Steel Foundry division, Continental Roll & Steel Foundry Co., East Chicago, Ind., has become chief metallurgist, Firestone Steel Products Co., Akron, O.

□ □ □

James P. Ferguson has been appointed assistant general manager of sales of the Reading-Pratt & Cady Co., Bridgeport, Conn., an associate company of the American Chain Co. Inc., Bridgeport. Mr. Ferguson has been associated with the Reading-Pratt & Cady Co. for the past ten years in the capacity of sales engineer.

□ □ □

Walter J. Moltrup has been elected president of the Moltrup Steel Products Co., Beaver Falls, Pa., succeeding his brother, the late J. T. Moltrup. F. F. Ward, recently vice president and assistant treasurer, has been made vice president with M. L. McGaughey, now assistant treasurer. J. L. Phillips has been re-elected secretary and treasurer.

□ □ □

Donald L. McCubbin, assistant manager, was appointed manager of the Cincinnati plant of Joseph T. Ryerson & Son Inc., Chicago, effective Feb. 1. Mr. McCubbin comes to this position after nine years at the Ryerson Chicago plant and more than seven years with the Cincinnati division.

Lewis E. Skinner returns to the Chicago sales organization to take over a special sales department.

Obituaries

F A. OGDEN, general freight agent of the Jones & Laughlin Steel Corp., Pittsburgh, died Feb. 1 at his home in Crafton, Pa., after an illness of several weeks. He was connected with Jones & Laughlin for more than 42 years, having entered its employ in 1889 in the order and freight department, after several years service with the Baltimore & Ohio railroad. He was subsequently advanced to the office of general freight agent.

□ □ □

Robert P. Maloney, general manager of the Dominion Coal & Steel Co., Sydney, N. S., and former western Pennsylvania and West Virginia coal operator, died Jan. 31 in New York. He was a former vice president of the Davis Coal & Coke Co., Thomas, W. Va.

□ □ □

John D. Baldwin Sr., 57, superintendent of the Weatherhead Co., Cleveland, maker of automotive parts, died at Cleveland Jan. 29. For many years he was identified with the Bishop & Babcock Mfg. Co., Cleveland, and became affiliated with the Weatherhead Co. in its formation in 1924.

□ □ □

Frederick J. Townsend, 83, wire manufacturer, Painted Post, N. Y., died Jan. 24 in that city.

□ □ □

Alan F. Hilton, 38, metallurgist of the Farrel-Birmingham Co. Inc., Ansonia, Conn., died at Ansonia, Jan. 24. He was born in Cleveland, attended Harvard university and had been connected with the Farrel-Birmingham company since 1923. Aside from membership in the New Haven, Conn., chapter of the American Society for Steel Treating, he was also a member of the A.S.T.M.

□ □ □

Frank C. Case, 77, director of Lamson & Sessions, Co., Cleveland, and a former president and chairman of the board of the company, died at his home in Lakewood, O., a suburb of Cleveland, Feb. 1. He wai born in West Bloomfield, N. Y., in 1854 and attended Oberlin college, Oberlin, O., where he later taught for several years following his graduation. In 1888 he went to Cleveland and became affiliated with the Lamson & Sessions Co., being named president in 1912. He relinquished the presidency in 1921 to become chairman of the board, but was retired from that position at the time of his death. Mr. Case was prominent in Cleveland philanthropies. A son, George S. Case, who survives, is at present president of the company.

Foreign Competition for Wire Rope Business Sharp

New York—Wire rope manufacturers are encouraged by the statement of President Hoover that he favors legislation giving the government authority to purchase American materials even if foreign materials were offered cheaper. Substantially this is proposed by the Kahn resolution.

Wire rope bought by the government still is largely from abroad, even though a ruling was made that domestic material is to be favored if the spread over foreign is not great. Foreign wire rope manufacturers have largely captured the fisheries business centering at Boston, amounting to $100,000 a year.

More annoying to domestic wire rope makers than the tonnage taken by the importers are the low prices quoted by them. These prices always are lower, in some cases only 60 per cent of the domestic prices. Wire rope manufacturers constantly are encountering questions and accusations from customers to whom quotations on foreign rope are made.

MIRRORS of MOTORDOM

DETROIT

THE depression is over for automobile service stations. The new Empress Eugenie style in engines and chassis insures that. No longer is the automobile engine a simple, accessible mechanism, encumbered only with a starter, generator, carburetor, water pump, fan and gasoline pump. Nor is the chassis a clean, sleek pair of side rails connected with cross members.

The trend this year is toward gadgetry, as it has been described; toward automatic and semiautomatic clutches, ride controls, automatic starters, adjustable rear axle ratios, free wheeling, nonclashing gears and other accessories which, for silent and smooth service, require an exact adjustment. One look at the chassis of the average car reveals why it is the garage man's delight.

In bodies there is a similar complication. The solid citizen who has graduated from a brownstone front and cupolas to a simple Colonial or English type house, who has removed the peacock feathers from the mantle and displaced overstuffed chairs with ladderbacks, is asked to drive a car whose slanting radiator and windshield pillars, flaring fenders and streamlined rear are a throwback to the Victorian extravagances which passed out of American life many years ago.

Gadgetry Window Dressing

There is, however, economic extenuation for gadgetry. It has enabled engineering departments to forego costly revision of engines and at the same time armed salesmen with showy arguments.

Although most driving is done on concrete or equivalent, the tendency toward higher speeds is reflected in heavier frames, strengthened by X cross members, a design typified by Auburn, Hupp, Chrysler, Hudson and Dodge. This will help swell automobile tonnage of strip and channels in 1932.

The new clutches, entirely automatic or actuated by a foot push button, have put under floorboards or on the carburetor sides of engines as much piping as is found in the average bathroom. While this mechanism, operated by vacuum, is not exactly delicate, nevertheless, grabbing or rough operation easily result from any maladjustment. Most of this piping is brass tubing.

Save Clutch, Use Brakes

As a balance to free wheeling, brakes are as much as 30 per cent larger, necessitating larger housings and appreciably increasing the requirements for steel and gray iron castings. The new clutches will rest the left foot, but free wheeling will exercise the right one more.

On cars equipped with ride control—and a majority are—rods lead from the steering post to the four shock absorbers. As with brake rods, rattles are the penalty for any looseness. In many cars these rods are cold-rolled steel—another new use.

Floating or cushioned power usually calls for a steel leaf spring at the rear of the engine and a mounting of rubber and either bar or strip stock at the front end. Fenders with the edges curled, as on the Hupp, or with the apron, as on the Graham, require wider stock. The new Graham radiator shell is a new use for sheets. The new transmissions, and the dual rear axle ratio on Auburn and Cord, are business makers for gear manufacturers.

The trend toward solid colors has not progressed sufficiently to injure chrome plating. On either regular or custom models, chrome plated radiator shells are featured by Pontiac, Lincoln, Studebaker, Chevrolet, Chrysler, Buick, Plymouth, Hudson, Marmon, Dodge, Olds, Packard, Hupp, Pierce-Arrow and Cadillac.

On Graham, DeSoto, Nash, Auburn and Willys-Overland there are chrome-plated grilles. The handles on hood louvres of Olds and Hudson, to mention only two, are chrome plated. More cars are stock-equipped with chrome-plated tire covers.

The hardest blow dealt the steel industry in 1932 models is the trend toward belt and away from chain-drives for water pumps and generators. Downdraft carburetion, more in evidence, requires more castings for the manifolds and longer intakes for enlarged air cleaners.

Radical as the gadgetry of 1932 appears, there is little that is absolutely new. Cutler-Hammer once made an automatic gearshift for the old Premier; Franklin once had an automatic starter; the old Maxwell had a semblance of floating power; the slanting radiator was typical of the old Franklin and many European cars; Cadillac 20 years ago had a 2-speed rear axle.

A year ago, Auburn, Cord and Reo appeared radical with their new body lines; today they are conservative. It is noteworthy that the General Motors lines, considered as a whole, are in the forefront of chassis changes but have permitted the independents to do the pioneering in body design.

Output in Even Balance

If there is any tendency in production of automobiles at this time it is downward, but the movement is extremely slight. Some of the strain is easing, now that the principal shows are over and most dealers are stocked—excepting Ford.

Last week, as since the middle of January, output of all passenger cars and trucks in the United States was 28,000 to 30,000 units. For all prac-

tical purposes, Ford is out of production. To the end of last week no large steel buy had been made, and Ford purchasing was entirely small, pickup lots.

No important changes in schedules have occurred since a week ago. Willys-Overland is expanding its steel buying and production, demand for its low-price line having been greatly stimulated by the reduced prices. Plymouth is understood to be planning an early start on its new line.

Olds has a schedule of 4000 units for February, having met with a good reception. DeSoto also is going stronger. Cadillac is operating practically full, night and day.

This publication's estimate of an output of 125,000 cars and trucks in January still stands. The variation from this figure in February will not be great; if Ford gets active a slight gain may be shown. Nothing like the usual seasonal improvement is in sight, yet sentiment continues moderately strong.

Financial Notes of Steel And Iron Industry

National Steel Corp., Pittsburgh, reports net profit of $668,713 after charges for the fourth quarter, equal to 31 cents a share. This compares with net of $326,113, or 15 cents a share, in the third quarter and $1,061,604, or 49 cents a share, in the final quarter of 1930. For 1931 the company reports net profit of $4,443,323, or $2.06 a share. This compares with $8,415,822, or $3.91 a share, for 1930.

□ □ □

Transue & Williams Steel Forging Co., Alliance, O., reports net loss of $167,874 in 1931, against net loss of $99,158 in 1930.

Sheet and Tin Plate Mill Wage Averages Down

Hourly wages in sheet mills in the United States in 1931 averaged 74.7 cents, 4.6 cents less than in 1929, the bureau of labor statistics has reported following an examination of representative mill records. Full-time earnings were $35.71 per week, compared with $52.26 in 1920. Average full-time hours per week were 47.8. In 1929 they were 48.9, and in 1913, 52.3.

In tin plate mills earnings per hour averaged 71.4 cents, compared with 73.2 cents in 1929, 94.9 cents in 1920 and 41.7 cents in 1913. Full-time weekly earnings in 1931 were $33.56; in 1929, $34.70; 1920, $48.02; 1913, $19.22. Full-time hours per week were 47, practically unchanged from 1929, but 2.6 hours less than in 1920.

Here and There in Industry

EATON-ERB FOUNDRY CO., Vassar, Mich., a subsidiary of the Wilcox-Rich Corp., which is a division of the Eaton Axle & Spring Co., has bought the assets and business of Holley Permanent Mold Machine Inc. and the gray iron foundry business and equipment of the Holley Carburetor Co., both of Detroit. Equipment will be transferred to the Vassar plant of the purchaser and sales offices will be maintained in connection with the Wilcox-Rich general offices. Frederick Erb continues at president of the Eaton-Erb company. J. L. Dostal, formerly general manager of sales of the foundry and permanent mold departments of the Holley interests, will be vice president. F. A. Buchda will be treasurer, and J. H. Bernard secretary.

□ □ □

Byers Machine Co., Ravenna, O., has added to its distributor organization the W. T. Walsh Equipment Co., Cleveland, and the Boehck Equipment Co., Milwaukee.

□ □ □

Kalman Steel Corp. has moved its sales office in St. Paul from 1112 Builders Exchange building to E-1422 First National Bank building. L. M. Roth is district sales manager.

□ □ □

Warner & Swasey Co., Cleveland has moved its New York district headquarters to 15 Washington street Newark, N. J., from 149 Broadway, New York. Eugene R. Gardner is manager.

□ □ □

Una Welding Inc., a subsidiary of the Clark Controller Co., Cleveland, has appointed R. A. Kyle its welding representative in New York territory, with offices at 51 East Forty-second street, New York.

□ □ □

Chicago Steel Service Co., Chicago, has completed new office quarters at its plant, Thirty-ninth street and Ashland avenue. The company deals in sheets, shapes and bars, and is distributor of Enduro stainless steel and Toncan iron.

□ □ □

Crossett Chemical Co., Crossett, Ark., is planning establishment of a plant at Crossett for the manufacture of dannemora iron and steel, in which charcoal iron is used, with scrap. C. J. Warner, of the Crossett company, has been conducting experiments in the use of charcoal as fuel in this connection, at the foundry of the Standard Brake Shoe & Foundry Co., Pine Bluff, Ark.

□ □ □

Kearney & Trecker Corp., Milwaukee, has appointed Motch & Merryweather Machinery Co., 1315 Clark building, Pittsburgh, its exclusive sales agent for Milwaukee milling machines in Pittsburgh and western Pennsylvania territory, including West Virginia and eastern Ohio. E. F. Schroeder, direct factory sales and service representative in Pittsburgh, will continue his work without change.

□ □ □

Nicholas & Miller, 1418-20 McCormick building, 332 South Michigan avenue, Chicago, pig iron, silveries, ferroalloys and coke, has changed its name to Miller & Co., effective at once. No change is to be made in the conduct of the business, personnel or agency arrangements. J. W. Miller continues senior member of the firm, which position he has occupied since the death of Robert C. Nicholas a year ago.

□ □ □

Rockford Northwestern Malleable Corp. and the Gunite Corp., both of Rockford, Ill., have consolidated at the Gunite Foundries Corp. Duncan P. Forbes, who has been president of both, is president and general manager. J. A. Forbes is secretary and assistant to the president, Frank C. Rutz and Erwin J. Mohr vice presidents, Noble J. Schmidt treasurer, and L. R. McCullough advertising manager and sales manager of the brake drum replacement division.

□ □ □

Medina Iron & Brass Co., Medina, N. Y., has been reorganized under new ownership, succeeding that of Mrs. DeCourcey Cleveland, who has disposed of the interest left by her husband. William J. Kirby is president and chairman of the board, William A. Munson vice president, J. D. Johnson secretary and treasurer. Mr. Kirby is also associated with the Somerville Iron Works, Somerville, N. J.

□ □ □

American Kron Scale Co., Bridgeport, Conn., manufacturer of heavy duty automatic dial scales, has been reorganized as the Kron Co., with additional capital, to broaden its activities. Its new plant is at 1720 Fairfield avenue, Bridgeport. Richard F. Straw is president, F. W. DeFoe vice

(*Concluded on Page* 63)

EDITORIAL

Steel Industry Can Help To Curb Hoarding

DURING the past few weeks a number of industrial executives have written to the editors of STEEL, calling attention to the serious menace presented by the prevalent practice of hoarding money. Several remedies have been suggested, including the proposal that legislation be passed making it unlawful to withhold currency from circulation in time of stress. Others have advocated a plan whereby bank deposits are guaranteed by the government or by other central agency, the assumption being that such insurance would tempt individuals to remove their hoarded cash from hiding.

No one will deny the importance of this problem. The fact that the President of the United States names $1,300,000,000 as an estimate of the amount of money withdrawn from circulation is enough to warn thoughtful citizens that it is time to call a halt to the pernicious habit of hoarding. When one considers that the amount involved is more than half the proposed maximum capitalization of the Reconstruction Finance Corp., it is clear that the situation calls for prompt and decisive action. In fact, if by the proper method of attack the public can be persuaded to return sequestered cash into the channels of trade, that feat will be the equivalent of increasing the capital of the federal credit bank by a large margin.

Problem Involves Educating Public and Speeding Activity of Credit Bank

What is the best way to discourage hoarding? Legislation is not the solution, for the obvious reason that enforcement of the law would be attended by insurmountable difficulties. Guaranteeing of bank deposits cannot serve in the present emergency, although it is possible that in the future our banking system will be perfected to the point where depositors are almost if not entirely assured of safety.

We believe the only feasible remedy for the present situation lies in the education of the public to the desirability of putting every available dollar to useful work. An appeal to individuals based on patriotic motives, as indicated in the President's announcement on Wednesday, will be heeded by many, but there will remain thousands who will not free their hoarded resources until the opportunity for sound investment appears more promising.

Therefore the educational campaign must be supported by a tangible improvement in the banking situation. Work of the Reconstruction Finance Corp. and other credit institutions should be speeded so that the beneficial results can be exhibited to the public. Freer credit will invite the release of sequestered money. The movement will be accumulative, once it gets well under way, but part of the initial impetus must be in the form of actual achievement. It will be a mistake to depend on propaganda alone.

Officers of Steel Companies Can Supply Cool-Headed Leadership

Responsible executives in the steel and allied industries have an opportunity to play important roles in helping to ease this credit situation. Throughout the industrial sections of the nation are many communities in which steel producers or manufacturers of steel products are the dominant business interests. Bethlehem, Coatesville, Sparrows Point, Johnstown, Clairton, Braddock, McKeesport, Aliquippa, Brackenridge, Lackawanna, Sharon, Youngstown, Wheeling, Weirton, Ashland, Middletown, Lorain, Gary, Joliet, Indiana Harbor and dozens of other cities and towns owe a large part of their activities to the presence of large steelworks and mills. The ranking officials in these plants should be and undoubtedly are in close touch with the heads of local government, the merchants and the bankers.

Many of the citizens in these communities receive their income from the steel companies. It goes to the merchants for the necessities of life and to the bankers for safe keeping and investment. Considering these close bonds of common interest and also the pressing requirements of the present situation, would it not be wise for steel company executives to assume a more than ordinary interest in the affairs of their communities?

The last few weeks have brought to light many instances where financial hysteria in small cities has been completely wiped out by the timely counsel of a few cool headed civic leaders. The same formula can be applied to the problem of hoarding. We believe that qualified steel company officials are in a position to do much toward relieving the financial tension through the influence they can wield in their respective communities.

THE BUSINESS TREND

Credit Jam Continues To Retard Improvement

IMPROVEMENT in the volume of business lacks positiveness. Reports for January probably will show a small gain in ingot production. Automobile output was up moderately. Car loadings are lagging considerably below 1931 levels and in the week ending Jan. 23 receded somewhat more than seasonally. Pig iron production in the first month held so closely to the low mark of December that the change is not significant. As was generally expected, commercial failures soared to a new high record and the liabilities involved also were high.

In spite of this none-too-reassuring statistical picture, business sentiment reflects a fair measure of buoyancy, due largely to the fact that inquiries and small orders in many lines are more numerous than in several months. New evidence is appearing daily indicating that considerable business is in prospect, but is being withheld because of an uncertainty—in some instances bordering on fear—relative to the financial situation.

There is no question but what credit stringency has been relieved appreciably in certain districts, but in the nation as a whole the sluggish movement of money, the persistence of many individuals to hoard cash and the continued uncertainty of jobs have combined to further aggravate the credit situation.

This unwholesome condition casts a cloud over several very favorable developments. The railroad wage settlement, which has been negotiated following a long drawn out discussion, should enable the carriers to proceed with some of their more urgent repair and maintenance work. The Reconstruction Finance Corp., now its organization is progressing rapidly, should begin to exert an influence on business.

Favorable Forces Are Assembling for New Attack on Fear

But for these and other favorable forces to become wholly effective, it is necessary to have a more substantial foundation of public confidence than exists today. Somehow the present policy of conserving cash, of holding it from circulation as long as possible and of delaying purchases that in reality are urgent, must be superseded by a willingness to help speed up the circulation of money.

Strong forces now are being mobilized to do this very thing.

1931	
Jan.	$ 6,118,411
Feb.	6,155,548
Mar.	7,190,877
Apr.	5,135,499
May	4,182,732
June	4,499,293
July	3,661,751
Aug.	2,960,293
Sept.	2,559,047
Oct.	1,690,527
Nov.	1,248,689
Dec.	1,031,704
Total	$46,434,371

1930	
Jan.	$15,404,359
Feb.	16,107,410
Mar.	18,103,628
Apr.	16,113,583
May	16,570,790
June	14,376,931
July	13,479,870
Aug.	13,000,496
Sept.	11,514,933
Oct.	10,943,449
Nov.	7,949,384
Dec.	4,190,958
Total	$157,775,791

December Auto Output Was 121,533 Units

Passenger car production in December almost doubled the same November classification and consequently total output for the month, at 121,533 units, was the best since September. The 1931 total production of passenger cars and trucks is just shy of the 2,400,000-mark, according to the department of commerce:

	—United States—			Canada
1930	Total	Passenger cars	Trucks	Total
Dec.	155,701	122,748	31,528	5,622
Year	3,355,986	2,805,516	541,534	154,192
1931				
Jan.	171,851	137,805	33,534	6,496
Feb.	219,939	179,890	39,520	9,871
Mar.	276,341	230,835	45,096	12,993
April	336,939	286,252	50,022	17,159
May	317,163	271,135	45,688	12,739
June	250,657	208,955	41,342	6,835
July	218,961	182,927	35,854	4,220
Aug.	187,197	155,321	31,772	4,544
Sept.	140,566	109,087	31,338	2,646
Oct.	80,142	57,764	21,727	1,440
Nov.	68,867	48,185	19,683	1,247
Dec.	121,533	96,753	23,363	2,432
Year	2,389,730	1,967,055	416,640	82,621

Better Sentiment Shown In Gray Iron Trade

Gray iron production and new business did an about face during December, and instead of sinking to the lowest level for the year as it had done in the past, showed a slight increase, leaving November as the 1931 low point, according to the Gray Iron Institute Inc., Cleveland.

Production increased from 37.1 per cent of normal to 37.6; and new business from 26.5 to 30.7 while unfilled orders declined slightly from 23.1 to 22.6. All districts, with the exception of the Pennsylvania, Ohio, Michigan and Indiana area, reported increased activity.

More optimism was expressed by gray iron foundrymen during the month, three reporting a good business outlook, 27 fair, 47 poor and 35 bad. This compares with one good outlook, 27 fair, 45 poor and 40 bad in November.

Boiler Orders Diminish

December's orders for steel boilers totaled 409 units, 81 less than those of November and the lowest monthly total for any month of 1931. The December orders aggregated 394,317 square feet, against 424,044 square feet in November. For 1931 a total of 8017 boilers of 7,229,618 square feet were ordered; during 1930 the aggregate was 13,166 units with an area of 13,469,893 square feet.

Record Low Set for Steel Plate Orders

Steel plate orders in December were the lowest since 1923, when department of commerce compilations were commenced, attributable largely to declines in plates for oil storage material and miscellaneous uses. Monthly comparison follows:

In Tons

1930	Total	Oil storage tanks	Blast furnaces	Miscellaneous
Dec.	26,787	5,118	135	13,227
Year	469,435	115,454	10,357	214,505
1931				
Jan.	27,518	2,598	111	20,845
Feb.	24,438	3,585	75	16,245
Mar.	31,056	2,538	833	21,697
April	29,916	7,749	25	17,783
May	26,210	2,411	230	20,370
June	22,806	4,679	356	15,817
July	27,261	4,136	51	18,785
Aug.	24,282	1,138	125	18,331
Sept.	33,473	4,024	254	18,692
Oct.	20,839	1,955	200	16,336
Nov.	18,268	1,755	401	15,058
Dec.	16,442	778	86	13,891
Year	302,509	37,346	2,747	213,850

No Gains Shown in Steel Casting Plants

Bookings of steel castings showed little improvement in December, when orders received were at only 13.8 per cent of rated capacity. Total production for 1931 averaged 25 per cent of capacity, lows being recorded successively by months since March. Department of commerce figures follow:

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July	32,869	22.6	31,751	21.8
Aug.	27,458	18.9	30,186	20.7
Sept.	23,073	15.8	26,948	18.5
Oct.*	22,854	15.7	24,113	16.6
Nov.*	20,001	13.7	23,139	15.9
Dec.**	20,053	13.8	21,194	14.6
Year**	392,849	22.5	436,382	25.0

*Revised. **Preliminary.

Steel Furniture Orders Revert to New Bottom

November orders for steel furniture and shelving touched a new low and shipments during the month likewise reflected slackened activity. Eleven-month totals, according to the department of commerce, lag behind the same 1930 period:

(In Dollars, 000 Omitted)

	Business Group		Shelving	
1930	New orders	Shipments	New orders	Shipments
Nov.	1,587	1,632	468	502
11 mo.	22,606	23,654	7,782	7,859
Dec.	1,591	1,774	283	515
Year	24,198	25,429	8,065	8,374
1931				
Jan.	1,840	1,768	417	422
Feb.	1,478	1,563	401	382
March	1,487	1,522	455	481
April	1,424	1,481	408	423
May	1,306	1,305	506	409
June	1,272	1,221	452	449
July	1,092	1,074	328	371
Aug.	1,010	1,057	307	358
Sept.	1,059	1,188	304	310
Oct.*	1,114	1,078	304	310
Nov.	910	956	267	226
11 mo.	13,992	14,212	4,151	4,141

*Revised.

Improvement Prevails in Malleable Castings

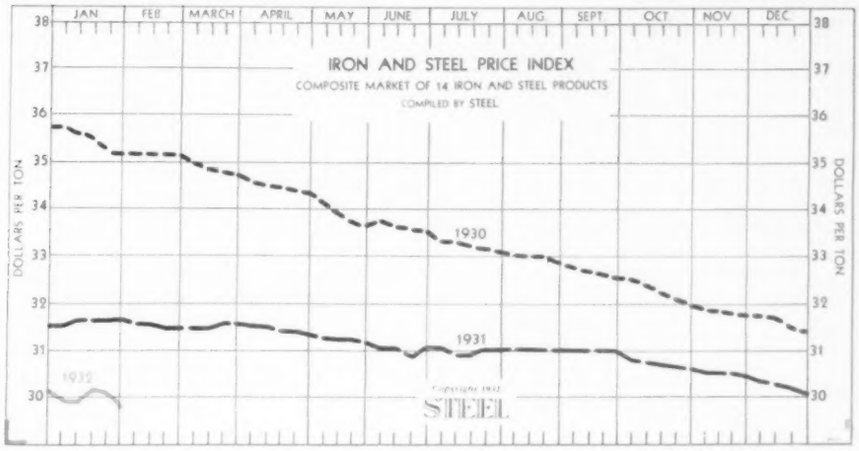
After the bottom set in November production, orders and shipments for malleable castings, improvement was recorded in these three classifications for December. Operations in December were at 21.6 per cent of the industry's capacity, by report to the department of commerce:

1930	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
March	35,210	36,677	34,331	35.9
April	36,076	37,693	36,086	36.3
May	31,450	36,540	28,328	32.2
July	19,943	23,511	19,400	20.1
Aug.	18,531	20,513	18,494	19.0
Sept.	18,193	18,387	17,610	18.6
Oct.*	20,161	17,473	18,233	20.5
Nov.*	17,736	17,990	18,658	18.4
Dec.**	21,200	19,970	19,493	21.6
Year**	307,191	321,085	298,051	26.1

*Revised. **Preliminary.

Total production of by-product coke for December amounted to 2,233,997 tons, an average of 72,064 tons per day. In comparison with November this was a decrease of 1.9 per cent in tonnage, but of 5 per cent in daily rate, according to the department of commerce.

	1932	1931
Jan. 30	$29.92	$31.73
Jan. 23	30.00	31.73
Jan. 16	30.08	31.73
Jan. 9	29.96	31.66
Jan. 2	29.96	31.66
	1931	**1930**
Dec. 26	$30.16	$31.66

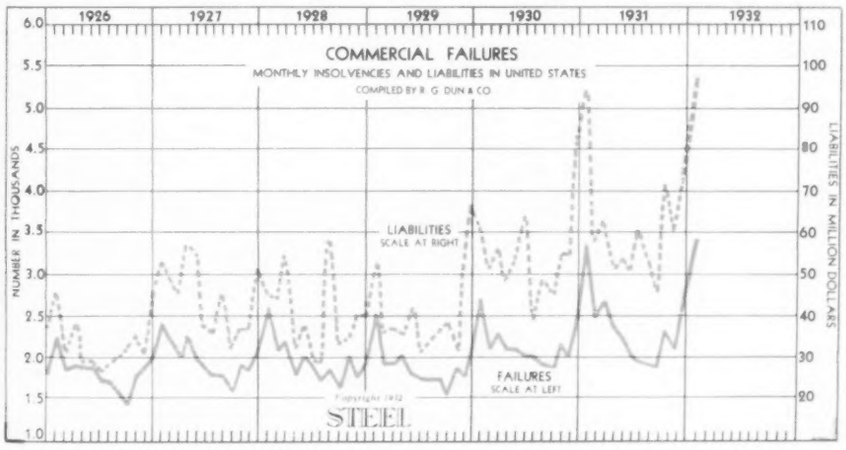


Composite of Steel and Iron Prices Shifts in Narrow Range

As indicative of the delicate balance of iron and steel prices, which respond easily to comparatively minor influences, STEEL's composite again has changed direction. On Jan. 2 the index stood at $29.96, which level was maintained on Jan. 9. A week later a stronger tone in plates, shapes and bars carried the composite up to $30.08. Shortly thereafter concessions granted in sheets depressed the barometer to an even $30, as of Jan. 23. Again weakness in sheet bars has caused another slight drop, and the composite at the end of the month stood at $29.92—a net loss of only four cents. The outlook for February is uncertain, the slight gain in orders proving a temptation for further concessions.

Insolvencies Rise To New High Mark in January

As was generally expected the number of commercial failures and the amount of liabilities involved reported to R. G. Dun & Co. for January were unusually high. Insolvencies, numbering 3,458 not only exceeded the abnormal figure of 3,316 for January, 1931, but also established a new high record. The current figure exceeds the total for January, 1930, by 700 and the total for the first month of 1929 by 900. Liabilities in January, 1932, aggregated $96,860,205, compared with $94,608,212 in the corresponding month a year ago. January usually is the worst month of the year for commercial failures. Last year the number dropped about 750 in February and tapered off to a low in September.

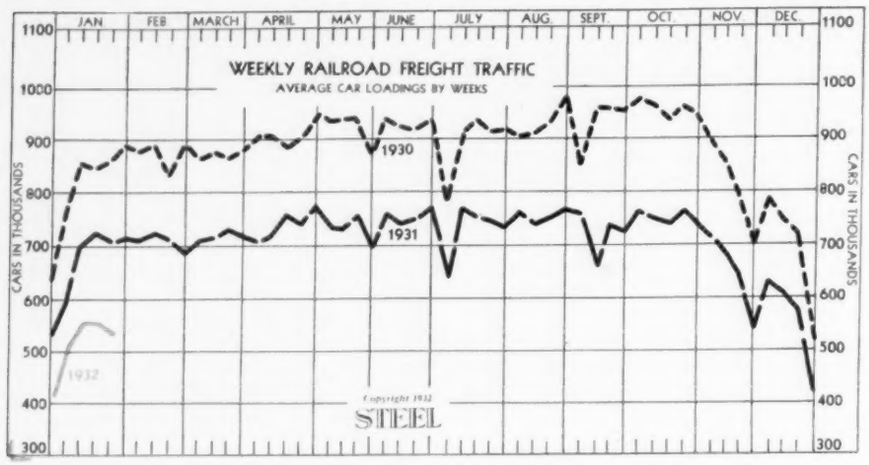


Liabilities

Jan., 1932	$96,860,205
Dec., 1931	73,212,950
Jan., 1931	94,608,212

Number

Jan., 1932	3,458
Dec., 1931	2,758
Jan., 1931	3,316



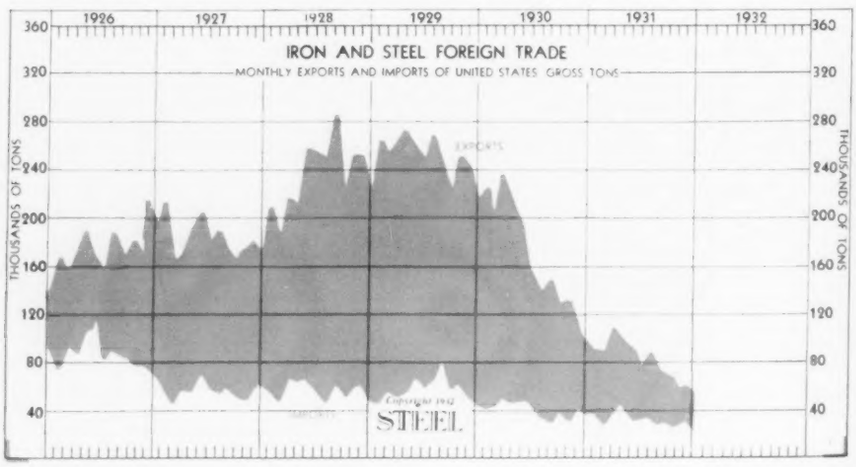
	1932	1931
Jan. 23	562,938	715,454
Jan. 16	573,276	691,753
Jan. 9	572,504	712,128
Jan. 2	503,325	614,860
	1931	**1930**
Dec. 26	441,589	536,292
Dec. 19	581,733	713,865
Dec. 12	613,534	744,353

Shrinkage in Freight Car Loadings Slightly More Than Seasonal

Loadings of revenue freight for the week ending Jan. 23 totaled 562,938 cars, a drop of slightly more than 10,000 from the previous week. A moderate recession usually occurs at this time of the year, due in a measure to a let-up in coal shipments. However the current loss is somewhat in excess of the normal seasonal shrinkage. The upturn from the year-end low point has not been as sharp this year as in 1931 and 1930. Consequently the curve thus far in the new year is lagging almost as far below the 1931 trend line as it fell below the curve for 1930. Slight gains in shipments of ore, grain, forest products and less-than-carload shipments were shown in the current report.

Iron and Steel Foreign Trade Still Receding As Year Ends

Foreign trade in iron and steel in December receded to the lowest levels of the year. Exports dropped from 59,556 tons in November to 57,263 tons in the final month. Imports, which totaled 34,658 tons in November, amounted to only 25,812 tons in December. Total iron and steel tonnage exported during the 12 months of 1931 was 965,268—a loss of more than a million tons from the total for the preceding year. The shrinkage in imports was much less marked. Imported tonnage in 1930 was 537,491 tons and in 1931 it amounted to 420,260 tons. Recent weeks have witnessed slightly increased activity in shipments of iron and steel to the United States from abroad.



Exports	Tons
Dec., 1931	57,263
Nov., 1931	59,556
Dec., 1930	101,992
Imports	
Dec., 1931	25,812
Nov., 1931	34,658
Dec., 1930	40,754

Continuous Manufacture of WELDED CONDUIT

BY J. B. NEALEY

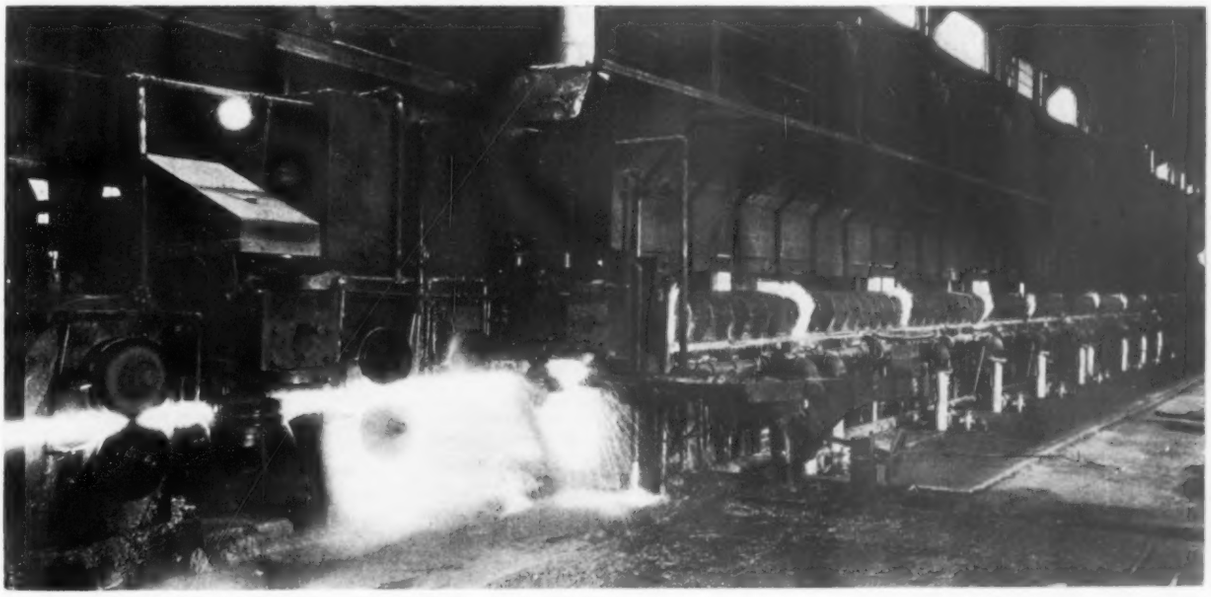
CONDUIT, used for the protection of electrical wiring, is essentially butt, gas or electric welded steel pipe of the smaller diameters and like pipe it is manufactured from skelp or strip which is heated, formed to tubular shape and seam welded. It is made in large quantities and from time to time production processes have been improved to effect economy and improved quality of product.

One of the largest manufacturers of conduit is the Fretz-Moon Tube Co., Butler, Pa., which for several years has been operating a continuous process for the production of steel conduit, a process on which it holds patents. The continuous feature is obtained by using coiled skelp in lengths from 300 to 1500 feet and welding one coil to the next. This skelp, then passing successively through leveling, heating, forming, butt welding, sizing and cutting-to-length operations, is converted into conduit ready for galvanizing or enameling. According to conduit size, skelp varies in width from 1 9/32 to 9¼ inches, in thickness from 0.065 to 0.154-inch and the resulting conduit ranges in nominal size from ⅛ to 2½ inches.

To maintain the continuity in mill operations during the welding of one coil to another, a device patterned after the take-up loop in the motion picture machine is employed, the strip skelp being looped out to a special runway to supply the heating furnace during the momentary pause for joining.

The furnace through which the skelp passes preparatory to forming and welding operations differs from other pipe furnaces in that it has a much smaller cross section and is designed for a more effective heat transfer. The principal object in the design of this furnace was to concentrate the heat on the edges of the skelp, as the body of the skelp needs a bending heat only. This is accomplished by placing a long row of gas burners in each side of the furnace so that they fire against the edges of the skelp as it passes through. The speed at which the skelp moves varies from 150 to 225 feet per minute depending upon its weight.

The furnace is of brick and steel construction, 125 feet long, 4 feet wide and 5 feet high. Instead of the hot skelp being dragged over a rough hearth it is pulled along over a series of water-cooled skids where there is little chance of it picking up foreign material. As concentration of the heat application is the most important factor, the heating chamber proper is only 11 inches wide and 14 inches



Conduit emerging from gas-fired skelp furnace and passing through forming, welding and sizing rolls continuously and automatically

high, and the burners fire through bell-mouthed refractory tunnels so that the heat transfer is through convection, radiation and flame impingement. These tunnels as well as the lining of the furnace are constructed of sillimanite, which will withstand a temperature of 3300 degrees Fahr.

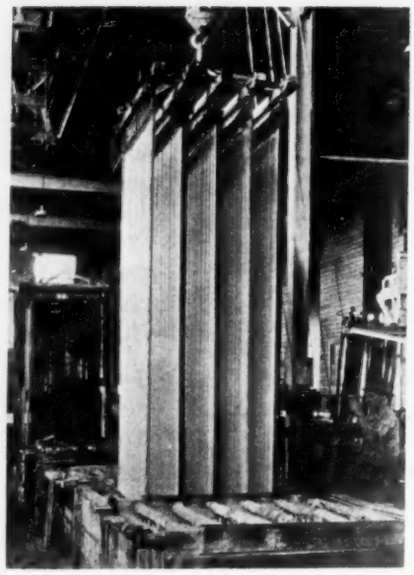
The burner tunnels are designed so that once the temperature is attained, the gases issuing from the tunnel are burned completely and at a temperature closely approaching the theoretical flame temperature. Thus one cause of furnace inefficiency, that of lack of provision for protecting burning gases from dilution with inert flue gases before combustion is completed, has been largely overcome.

Gas Consumption High

There are 80 burners, 40 to a side, and they are manifolded, four to an inspirator set of the low-pressure type. Of course the function of the inspirators is to maintain constantly and automatically the predetermined ratio of gas and air and to mix the two intimately. With these features the rate of combustion is 1000 cubic feet of gas per hour in a single cubic foot of combustion chamber space, which is exceptionally high. Total capacity of the burners is about 70,000 cubic feet per hour. Air is delivered to the inspirators by a 1500-pound turbocompressor with a capacity of 9000 cubic feet per minute at 24 ounces pressure, while the gas supply from the mains is reduced to zero pressure by two sensitive regulators, one for each side of the furnace.

The production rate is a direct factor of the furnace temperature, in this particular application, and amounts to 10 tons of 1½-inch conduit hourly with a consumption of only 3700 cubic feet of gas per ton of work.

Another improvement in this plant is a method by which edges of the skelp are stepped up to full welding heat outside the furnace. As the strip steel emerges from the furnace it passes through forming rolls which



Racks of conduit being lowered into electrogalvanizing vat

give it the round shape of pipe with the edges in close contact. They require just a little more heat for welding and this is obtained by playing a jet of air on the hot edges. The reaction of the oxygen of the air and the carbon of the steel brings the temperature up from 2500-2600 to around 2800 degrees Fahr. and the skelp passes directly into a set of rolls which press the edges together into a tightly welded seam.

The pipe then passes through several sets of sizing rolls which true it up to its final shape and diameter. It is next cut up into lengths by a high-speed rotary saw, mounted on a traveling carriage which moves along at the same speed as the conduit while it is sawing through, returning to starting position for the next cut.

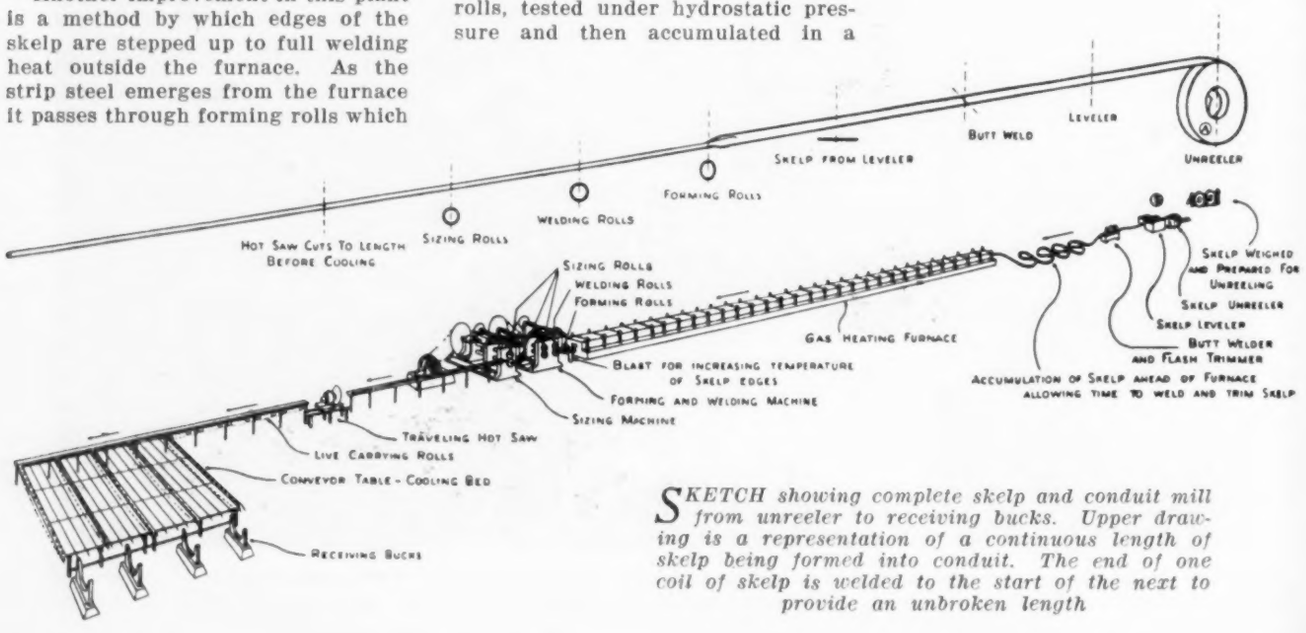
After the lengths are cooled they are passed through straightening rolls, tested under hydrostatic pressure and then accumulated in a cradle from which they are picked up by crane and removed to the finishing division. Here the pipe is given one of three finishes—galvanizing, black enameling or electrogalvanizing. In all three treatments the inside is finished in black enamel.

Improved Galvanizing Pot

The galvanizing department employs a new type of galvanizing pot which is top-fired, embodying a number of advantages from a production standpoint. This installation was described briefly on page 36 of the May 28, 1931, issue of STEEL. Heretofore galvanizing tanks or kettles have been heated from the bottom; but since in this plant all of the cold metal is introduced at the top, quantities of cold air came in contact with the top surface of the liquid metal and much heat was lost through black body radiation from this surface. This led to the conclusion that the heat was needed most in the upper part, rather than at the bottom, so the burners are set about 18 inches below the top.

This galvanizing tank sets in a brick furnace, which in turn rests in a pit in the floor, so that the conduit can be handled in and out with greater ease. The furnace walls, including refractories and insulation, are about 2 feet in thickness. Heat is supplied through 36 gas burners, 18 on each side and in a single row. These are high-pressure impact burners utilizing gas at 20 pounds and are supplied with primary air for combustion, in the correct ratio, through inspirators.

The burners are cemented in the outer furnace wall, and immediately in front of each burner is a small chamber, built directly into the wall, in the bottom of which is a bed of refractory material. The burners fire directly upon these refractory



SKETCH showing complete skelp and conduit mill from unreeler to receiving bucks. Upper drawing is a representation of a continuous length of skelp being formed into conduit. The end of one coil of skelp is welded to the start of the next to provide an unbroken length

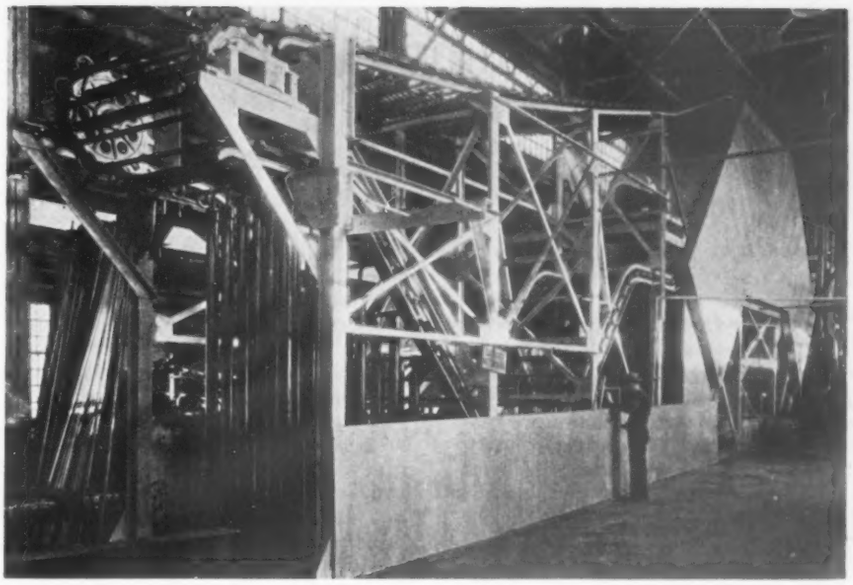
beds bringing them up to incandescence. The hot products of combustion are drawn over a low bridgewall and down the sides and bottom of the kettle to a common duct, running the entire length of the tank, to a stack. The radiation from the refractory beds is to promote complete combustion in the shortest space and quickest time. While the furnace walls facing the kettle radiate a large quantity of heat to the kettle walls, most of the heat into the tank is through convection, because of the fact that the distance between the furnace and kettle walls was designed so as to provide the greatest velocity for the products of combustion passing through. This method provides material savings in fuel, labor and dross accumulation, increases production and tank life and improves the quality of the product.

The process of dipping the conduit is controlled through guide bars and notched disks. Guide bars are bent to form half loops, the ends resting on the sides of the kettle so that the loops hang down in the molten spelter. A long drum, motor driven, is mounted on the top of the tank and forms a shaft for four notched disks of the same diameter as the loops and with notches to catch the pipes individually. When this drum is rotated the disks push the pipes from one side of the tank down through the flux and molten spelter where it is coated inside and out, and up to the other side.

Interior Blown Out

Here an operator picks up one end of each pipe as it comes out, passes it through a small steam blowing pipe in the shape of a ring and touches it to two motor-driven magnetic rolls. The rolls pull it out of the tank and through the steam ring where the extra spelter is blown off and delivers it upon a rack or cooling table. At this point another operator places the bell mouth of a steam pipe over one end of each piece of conduit and blows out any extra spelter that may remain inside.

The pipe then is finished into conduit by threading and coupling. Protectors are applied and finally the inside is black enameled, accomplished by laying the conduits out on a rack and forcing the ends upon nozzles in manifolds through which the black enamel is allowed to run. The enamel flows through the pipes and is caught in a tank at the other end. It is then baked on in a gas-fired oven. Those pipes that are black enameled inside and out are suspended from special hangers on a chain and bar type conveyor which runs through a bake oven. This conveyor is so designed that the pipe first descends and is immersed in a tank of black enamel from which it gradually rises and is passed through an A-type bake oven. Gas burners furnish the heat, automatically regulated by temperature controllers. The baking period is timed through the speed imparted to the conveyor by the motors operating it. Hence coating and baking are continuous and automatic.



Mechanical handling unit and gas-fired oven which automatically dips the conduit in enamel and bakes the coating on

Electrogalvanizing is accomplished by suspending the pipes from large racks which are handled by overhead cranes and hoists. With this equipment the pipes are submerged in deep vats where a coating of zinc is deposited, both inside and out, by electrolysis. The inside then is flooded with black enamel and baked as previously described. The plant has a capacity of 4000 tons of conduit monthly.

New York Finds Work for Unemployed Engineers

Engineers are thinning the ranks of their unemployed in the New York area, according to H. de B. Parsons, chairman of the Professional Engineers' Committee on Unemployment. Locations have been found for nearly 50 per cent of the 1200 men who have registered at the work bureau in the Engineering Societies' building.

It is estimated that by the latter part of February 90 per cent of the registrants will have obtained part or full-time work. Branch agencies have been opened in Newark, N. J.; Bronxville in Westchester county; and Lynbrook in Nassau county.

Financial distress in the profession also is being overcome with cash contribution of nearly $70,000 and pledges for several thousands more. Among the largest contributors was President Hoover, who gave $5000 and promised more if necessary, and the Engineers' club of New York, which contributed $2500. To carry out its relief program, $200,000 is sought by the committee.

The depression presents only one phase of the engineering employment problem, says W. V. Brown, manager of the Engineering Societies' employment service. Even before the slump, he said, there was a tendency for engineering companies to reject services of men over 45. Many engineers have lost their positions since 1929, and it will be difficult for them to find places when prosperity returns, for employers now insist on engaging men from 20 to 30 for permanent positions.

Revises Specifications For Vanadium Steels

Vanadium Corp. of America, 120 Broadway, New York, has recently revised and re-issued seven specifications for vanadium steels for various purposes. Each specification covers manufacture, chemical properties and tests, physical properties and tests, and workmanship and finish.

The new specifications cover the following: 3B—high-test carbon vanadium cast steel for locomotive and other castings; 4B—silicon vanadium bars for railway springs; 5B—helical springs of silicon vanadium steel for railways; 6B — chrome-vanadium steel bars for railway springs; 7B—elliptic springs of chrome-vanadium steel for railways; 8B—chrome vanadium steel bars for automobile springs; and 9B—elliptical steel springs for automobiles.

Testing Machine Will Exert 4,000,000-Pound Pressure

A NEW giant in the testing machine field recently has been completed and tested by the Baldwin-Southwark Corp., Eddystone, Pa., for shipment to the University of California, Berkeley, Calif. Shown in the accompanying illustration, the machine is capable of testing columns up to 33 feet 6 inches in length in compression up to 4,000,000 pounds load; while in tension tests it will handle specimens up to 33 feet 6 inches, diminished by machine stroke, applying loads up to 3,000,000 pounds.

The machine is claimed to be the largest in the world and in process of a recent test a specimen 8 1/16 inches in diameter was pulled in tension and broken. Failure occurred at 3,095,000 pounds; elongation in 30 inches was 19.6 per cent, with a reduction in area of 22 per cent. Unit stress on the original section was calculated to be 60,700 pounds per square inch. In this same test a concrete cylinder 30 inches in diameter and 60 inches high was crushed under pressure of 2,950,000 pounds.

Spread between the columns of the machine is 10 feet and the table is 12 feet long. Since the table is level with the laboratory floor a truck may drive between the columns and the specimen be lifted directly from the truck body by the testing machine itself.

Since the principal load application is hydraulic it is necessary to provide a cylinder and ram and a pressure producing fluid pump. The ram is 46 inches in diameter and the hydraulic pressure is about 2500 pounds per square inch when operating at capacity.

The table of the machine is stationary, being secured directly to the foundations. The ram is fastened to this table. The cylinder, therefore, is the movable element and to it is fastened by lug extensions two vanadium steel screws 12 inches in diameter and 56 feet 8 inches long, threaded double, 1/3 square threads per inch. By means of long bronze nuts which are bedded in the lower cross-head, the loads are transmitted from the screws to the cross-head. The purpose of the threads, however, is not to produce the load as has been practice in some types of testing machines. During loading there is no movement of nut and screw relative to one another. The function of the screw and nut is to raise or lower the lower cross-head so that the space available for testing may be changed to accommodate the specimen to be tested.

Compression tests are carried out between the lower cross-head and the table, while tension tests are made between the upper cross-head and the yoke around the lower cross-head. The total load stroke of the lower cross-head is 48 inches. The total adjustment for change of specimen length is 33 feet 6 inches.

This latter change is effected by rotation of the screws by means of a geared motor, from the control board located at some distance from the machine in a glass inclosed room, communication between the operator in the control room and the operator at the machine being by means of telephone. In addition, loud speakers may be brought into action so that a group may be informed of the progress and technique of the test.

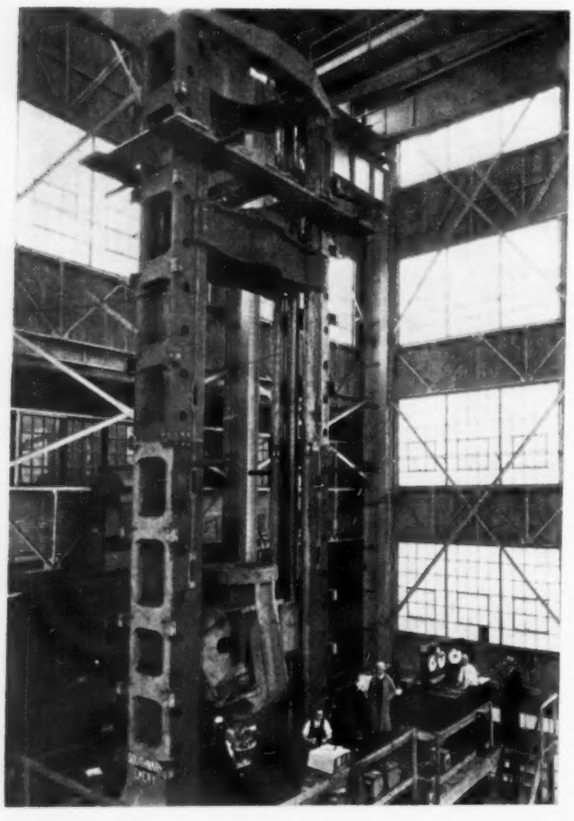
Heavy Parts Required

Materials of construction are, in general, high grade steel castings, alloy steel forged parts, and high grade bronzes. The rams are of close grained cast iron and are ground to a final finished diameter. The weight of the main ram is about 28,000 pounds and that of the cast steel cylinder is 40,000 pounds. The grips for tension testing are chrome-nickel steel, heat treated and machine cut. They weigh more than 3000 pounds and occupy recesses in the cast steel cross-heads which are about 12 x 24 inches. The grips are handled by air cylinders as they are too heavy for manual manipulation.

This machine stands 46 feet 9 inches above the floor line and the foundations to about 25 feet below. The depth of the pit is 19 feet—a concrete tank of nearly 1000 barrels capacity. Total weight on the foundation is about 475,000 pounds.

In both compression and tension testing the lower cross-head moves downward. In order that these heavy weights—about 200,000 pounds—may be returned to position preparatory for a new test it is necessary to provide two 13-inch diameter pull-back cylinders which are supplied with pressure from the same source as that for the main cylinder and ram. These pull-back cylinders have another important function to perform. In the failure of specimens either in tension or in compression there is an enormous store of energy released in a small fraction of a second. These cylinders and rams together with four nests of heavy springs absorb this "shot" of free energy and damp it out without damage to the structure, acting similarly to gun recoil chambers.

Because the height of this machine above the floor is equivalent to more than that of the third floor of an average building provision has been made for the application of an ele-



THIS mammoth testing machine will pull specimens in tension up to 3,000,000 pounds and will provide a compressive force of 4,000,000 pounds. The top is nearly 47 feet above the floor line and, when installed, an elevator will carry assistants to any level for inspection of various parts in action

vator. This will permit the presence of assistants at any level for extensometer readings, for examinations of the specimens or for inspection of the grips.

Calibration of the machine required the services of three men for one week, and was effected by the use of Morehouse proving rings, manufactured under the Whittemore-Petrenke patents and calibrated at the bureau of standards, Washington.

One of the unusual and unique features of this machine is the highly refined control system that is incorporated. Devices are mounted for maintenance of constant load over an indefinite period; devices for application of load at constant rate of load increment; start, stop and inching buttons for motor control; limit switches for safety and cutouts for same under specific conditions. A clock, and indirect lighting for the gages, as well as pilot lights for motor circuits are other unusual refinements.

Rivet Manufacture Keeps Step with Progress in Fabricating Methods

BY PIERRE CHAMPION
Vice President, Champion Rivet Co., Cleveland

RIVETING as a means for joining and otherwise fabricating steel structures is a universally accepted process. Because it was one of the first means of connection developed and because many years of use have intrenched it firmly, riveting has retained a favorable position in spite of energetic competition.

Progress in the industry has been continuous with the rivet manufacturer playing an unassuming but most important part. With the development of higher strength steels and new structural sections, rivet makers were called upon to provide rivets of higher strength and better physical properties to meet exacting specifications. These demands have been met and today rivet manufacturing has become a highly specialized industry.

New Rivets Developed

During the past few years there has been developed in the hot formed rivet a special processed rivet particularly adapted to high pressure work. These rivets are made from a special selected quality of forging steel and the rough forgings are pickled to disclose any defects in the steel. Following pickling, they are centerless ground to a tolerance of plus or minus 0.002 inch.

Advantages of this type of rivet are that they are free from scale and because of their close tolerance they require a minimum amount of upsetting in the hole to produce a 100 per cent tight joint. Prior to the development of this rivet, it was standard practice to drive ordinary hot pressed rivets into reamed holes. The natural scale on the rivet would prevent a 100 per cent clean metal to metal contact, and when the boiler was placed in operation caustic embrittlement would set in and attack the scale driven into the hole with the rivet, the result being a leaky boiler.

There has been a trend toward use of cold pressed rivets, especially in cases where electric rivet heaters are used. This can be accounted for by the fact that a better cut-off is obtained with a cold pressed rivet which permits an even contact on the electrodes of the heater. However, cold pressed rivets are not recommended for pressure work. Certain working strains are set up in the metal during the cold forming process and, in the opinion of the author, the heating before driving is not of sufficient duration to afford proper annealing or relief of these strains. Moreover, the rivets when driven are at once placed under a different strain.

For certain types of work a demand has been noted for cold made and annealed rivets. The company with which the author is associated has perfected an annealing process by which it is possible to supply annealed rivets testing 20 on the Rockwell B scale. Rivets possessing this softness can be driven with a minimum amount of pressure.

Fail To Appreciate Worth

The greatest problem of the manufacturer is to instill in the minds of users a proper appreciation of the rivet's worth. Rivets are a most important part of any fabricated structure for much of the safety of the structure depends upon the rivets. If the purchaser could be made to appreciate just how important good rivets are, a major problem would be overcome.

There is no great mystery about rivets which requires that extensive tests be made. It is a simple enough matter to examine a rivet both physically and chemically. If the user employs reasonable care in driving rivets, there can be little doubt about the resulting joint, because very tangible quantities are being dealt with.

The heat applied to drive rivets is not sufficient to change their physical characteristics, thus the element of guesswork in determining the strength of a riveted joint practically is eliminated. Riveting technique may be improved by reducing the number of rivets in a seam, using alloy steels and thereby reducing the weight of the total structure.

A new application in the past year is the use of stainless steel rivets for hull bottoms of ocean going vessels where corrosion resistance is highly desired. Perhaps it sounds extravagant to use this type of rivet for such a purpose, but when one considers the expense of dry docking a boat, the loss of revenue to the owner and the cost of replacing rivets in hull bottoms, it will be found that the cost of corrosion resisting steel can be absorbed easily.

Inroads on Rivet Business

If times were normal, three times as many rivets would be produced today as were produced in 1910. Of course, there has been a natural growth in the country which would lead to the belief that we should produce more than three times as many, but great inroads have been made on the rivet business by the so-called Bethlehem or Grey section. Years ago it was figured that rivets constituted 7 per cent of the total structure, today they account for a scant 3 per cent.

It must be remembered also that welding has replaced riveting in a number of applications, but on the other hand, steel construction has replaced wood construction, as for example in railroad cars, and this has created a larger demand for rivets which offsets to some extent the loss suffered by use of the lighter structural sections.

Welding has its place in the steel construction field and so has riveting; possibly the two overlap, but the author contends that welding will serve as an aid to riveting and not as a substitute. The glue pot did not replace the nail in the manufacture of furniture.

Rivet manufacturers of this country could well afford to establish a centralized bureau for dissemination of information in connection with riveting. A joint educational program along this line should result in greater development of the riveting art.

New Product Broadens Field For Malleable Castings

BY ENRIQUE TOUCEDA
Malleable Iron Research Institute

AN INTERESTING development in the malleable iron industry has been the introduction of a special product which is of higher average ultimate strength and yield point than malleable iron, although ductility, while good, is lower than that of high quality malleable iron used for guard rails, bridge rails and side stakes.

The product is sold under a trade name and is not precisely malleable iron, in that the structure of the latter consists of a ground mass of ferrite throughout which are uniformly distributed nodules of temper carbon, while this constituent in the former is as uniformly distributed throughout the section, but lies in a matrix of pearlite, which is considerably harder than ferrite.

High Strength, Long Wear

Furthermore, a marked difference exists in the normal appearance of the fracture of the two, that of the special product being steely and the other black. Obviously, the product with the pearlitic matrix cannot be machined with the speed possible in the case of true malleable iron. However, the facility with which machining can be done will lie between what is possible in the case of malleable iron and the ordinary steel casting. Where an exceedingly high yield point is essential and a good wearing surface a factor, the special product is superior to malleable iron of highest tensile properties, and it can be furnished with an elongation sufficiently high to warrant freedom from brittleness.

Due to the properties referred to, its proper field obviously lies outside of that occupied by normal malleable iron. Through the use of these two products, however, an extremely wide choice of properties is at the disposal of the engineer for almost any purpose where castings are used.

The yield point and ductility of the regular high tensile malleable iron can be made to square with the requirements of class B steel castings. Also, its machining properties will be better. The yield point of the special product can be furnished to run some 15,000 pounds in excess of that of class B steel, and its machinability will be somewhat better.

AMPLIFICATION of comment summarized briefly in the Jan. 4 issue of STEEL, in an article outlining progress in the foundry industry in 1931, is presented in the accompanying remarks by Enrique Touceda, consulting engineer, Malleable Iron Research institute, Cleveland.

Despite the serious business depression, general interest in matters pertaining to the malleable iron industry has been noteworthy, while certain improvements in metallurgical apparatus have been developed. These activities have manifested themselves in numerous directions. One notable example of the interest that has been shown, and one that should prove of far reaching convenience and importance to the trade, to the engineer-designer, to the metallurgist and to the student, is in connection with a symposium on malleable iron, prepared and edited by the American Society for Testing Materials, in co-operation with the American Foundrymen's association.

This work, comprising some 100 pages, presents data arranged in convenient form, on methods of manufacture, mechanical and physical properties of the product, resistance to corrosion, etc.

It is certain that no such ambitious effort would have been undertaken, or that such a substantial sum from the treasury of the society expended, unless those who collaborated in this work felt certain that both the large amount of work done and the expenditure incurred were justified. That no error in judgment was made is evident from the fact that prior to publication the society received advance orders for some 10,000 copies.

Propose New Limits

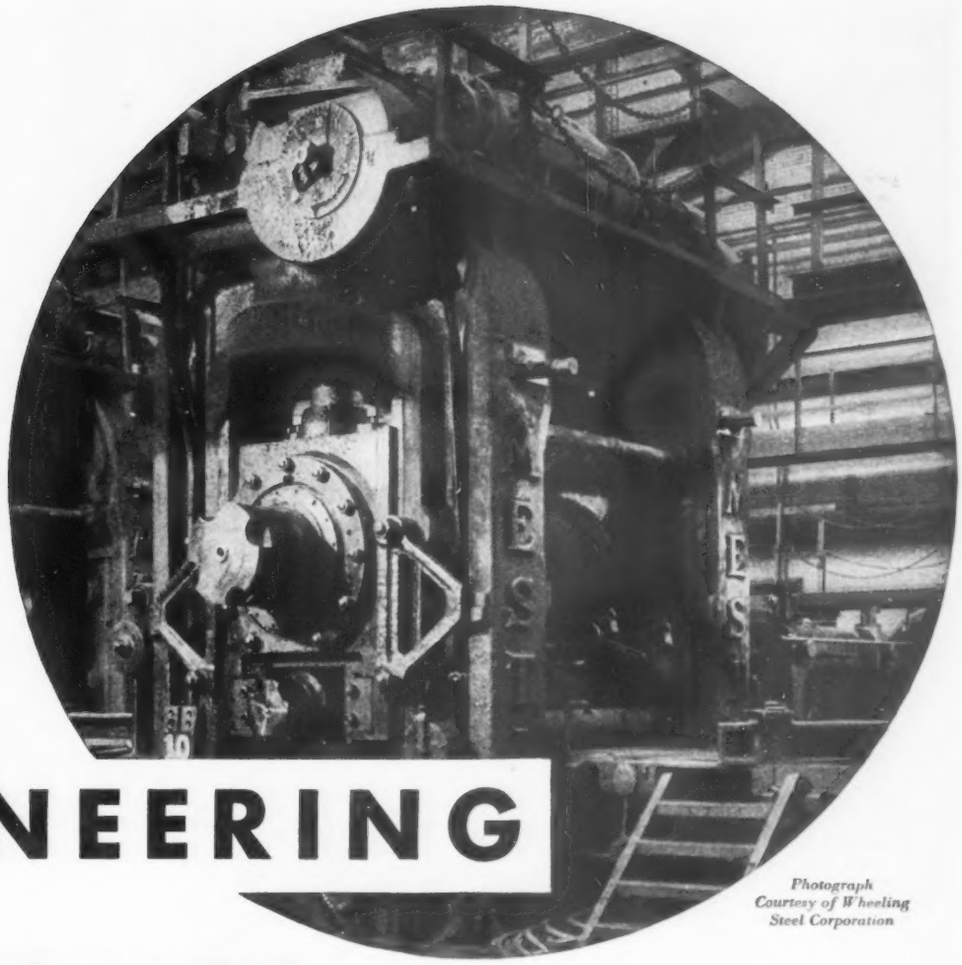
At the last joint meeting of A. S. T. M. committee A-7 and the A. F. A. committee on malleable iron, an additional specification, to be designated No. 35,018, was recommended for adoption as standard. This specification calls for the following minimums: Ultimate strength, 53,000 pounds per square inch; yield point, 35,000 pounds per square inch; and elongation in 2 inches, 18 per cent.

In connection with high quality malleable iron, it is worthy of mention that malleable iron side stakes were selected for use in the construction of some 1500 specially designed, heavy gondola cars for the Pennsylvania railroad. These side stakes had to conform in tensile properties to minimums of 55,000 pounds ultimate strength, 35,000 pounds yield point and 18 per cent elongation, and in addition were subjected to rigid railway inspection at plants of the manufacturer.

In Pittsburgh during 1931, a further substantial tonnage of bridge guard rails was specified, 340 tons going into the construction of the McKees Rocks bridge alone. The experience of the past several years has proved that in spite of the many instances in which these rails have been struck by automobiles and trucks moving at a high rate of speed, the guard rails have functioned 100 per cent, while prior to their use the injuries and fatalities had been many.

A large tonnage of malleable iron for guard rail posts and blast plates has been specified in the case of both the Albany-Rensselaer and Troy-Menands bridges, the erection of which is about to be started.

The high quality product has for the year received increased recognition in numerous directions, by reason of its inherent toughness, characteristically high yield point and the ease with which it can be machined.



Photograph
Courtesy of Wheeling
Steel Corporation

ENGINEERING STOPS NOT AT DESIGN

Anti-friction bearings were needed for four-high mills. After some experimenting, they were developed to a point where they were considered a success. But the exacting demands for lower production costs, involving higher speeds, increased drafts, and greater loads resulted in enormously increased bearing pressures. Troublesome bearing failures occurred—a remedy was sought.

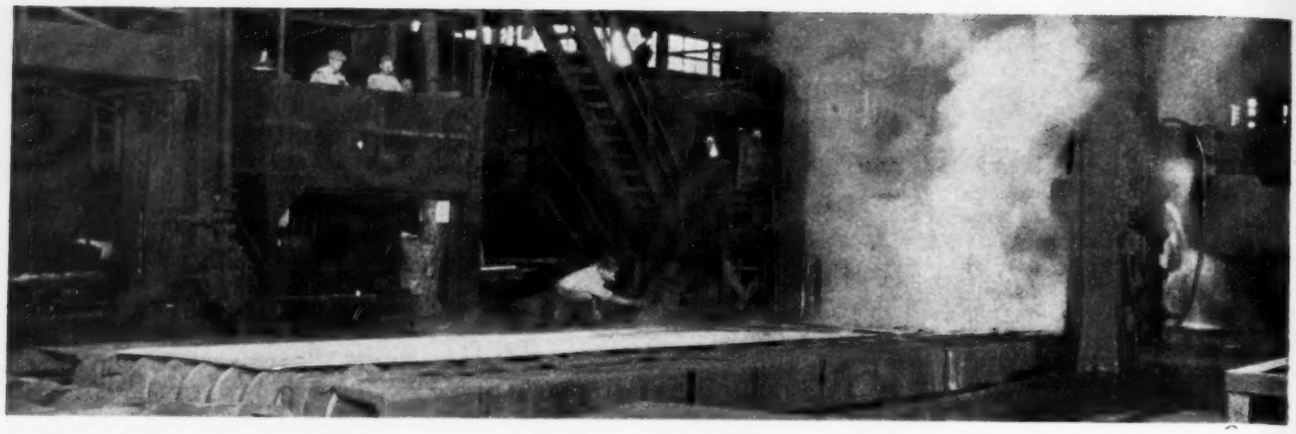
The answer lay in lubrication, as in most cases no changes could be made in the mill bearing design.

The solution was found by the engineers of the Pennsylvania Lubricating Company in developing Penola Heavy Duty Roller Bearing Lubricant X Series, a product possessing extraordinary film strength or extreme pressure characteristics. This product is, today, used in practically every rolling mill installation of this type.

Pennsylvania Lubricating Company engineers are always at your disposal.

PENNSYLVANIA LUBRICATING COMPANY
PITTSBURGH, PENNSYLVANIA
1885—*Lubrication in the Steel Industry*—1932

A Subsidiary of the Standard Oil Company (N. J.)



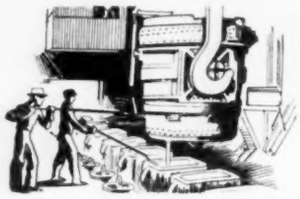
PROGRESS IN STEELMAKING

WELDED steel-plate charging boxes now are being used at the open-hearth department of the Lukens Steel Co., Coatesville, Pa. The sides and bottom of the boxes are formed from a single plate and the ends are welded in place. A reinforcing strip is welded along the top edge of the sides and rear end. The peel holder is of gas-cut plate welded in place and supported by horizontal stiffening plates. The box, 83 x 28 x 21 inches, weighs 1050 pounds and has a content of 30 cubic feet. It weighs about 10 per cent less than the conventional-type box and can be built for about 5½ cents a pound. According to J. D. Walters, superintendent of the company's open-hearth department, welded plate boxes show a lower depreciation than those formerly used, based on 12 months' service.

♦ ♦ ♦

One of the largest savings that hard surfacing has effected in the iron and steel industry has been made in rolling mill guides. In a large independent plant, a coated guide on the first finishing pass of the rail mill remained in service 10 weeks without change. The steel guide formerly used on this pass had to be changed every seven days, and after the first shift, had to be reground every 3 hours. The coated unit not only has decreased the time lost in changing guides but has reduced the percentage of scrap pieces and seconds.

UNIFORM surface requirements of plates rolled from killed steel ingots are obtained easily by the use of molds designed with vertical corrugations, according to recent investigations conducted at a plant in Pennsylvania. The theory is that the ingot wall during the cooling cycle, is supported by the corrugations, thus diminishing the tendency of the ingot to crack on the surface.



PROPER taper for ingot molds, according to comments of one maker, depends on whether hot tops are to be used, on the elapsed time from pouring to stripping, whether the mold is of the big-end-up or big-end-down type, whether top or bottom poured, whether a pit or stripper-type crane is used, and whether the ingot is to be rolled or forged.

♦ ♦ ♦

Numerous thrustors for engaging and disengaging the tongs on stripper cranes have been installed by a large steelmaking interest.

♦ ♦ ♦

Shortening the production cycle of wire from the lime baths to the drawbenches has been accomplished by a fabricator through the use of ovens heated by an indirect system. Compared with baking ovens formerly employed the new type units have effected a decrease in the baking time from 6 hours to 1 hour and a saving of 50 per cent in labor and 30 per cent in fuel.

♦ ♦ ♦

Recent improvements made in the Theisen disintegrator gas washer have reduced the power consumption considerably. By eliminating the various sets of stationary bars in this type washer, blast furnace gas is cleaned to a degree suitable for use in stoves, boilers and metallurgical purposes with a power consumption 35 per cent less than formerly required and is delivered at a much higher pressure. When a higher degree of cleanliness is required, such as for gas engines and coke ovens, the number of stationary bars is reduced from that formerly used with consequent power reduction of 25 per cent and with pressure increase in the delivered gas.

♦ ♦ ♦

Photoelectric relays for use in place of a limit switch in facing the ends of welded pipe have been installed at an Ohio mill. Cutting tools are brought up at high speed and come to stop in the correct cutting position as the pipe ends intercept a beam of light. Output on the facing machine has been increased materially.

♦ ♦ ♦

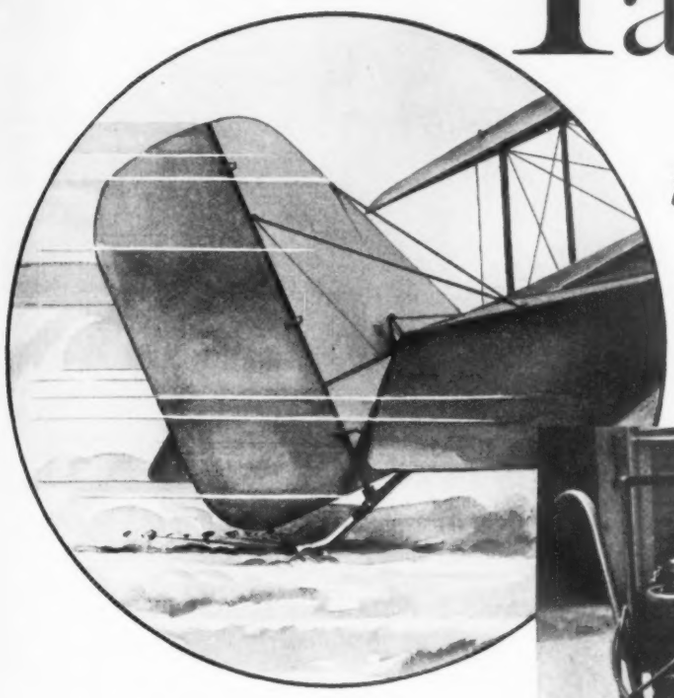
Research has culminated in the perfection of a composite alloy steel, the base metal being a mild steel and the corrosion-resisting surface any of the high chrome-nickel-iron alloys it may be desired to use. The plate of the alloy of predetermined thickness is welded to the steel slabs or billets and the composite material rolled into plates, bars, and other forms. Present practice recommends a ratio of thickness of alloy to backing sheet of about 1:15 but for pressure vessels the ratio may be increased up to 1:30.

A RECORDING dust concentration meter has been developed which should find wide usage at blast furnaces for checking gas-cleaning equipment and flue dust production.

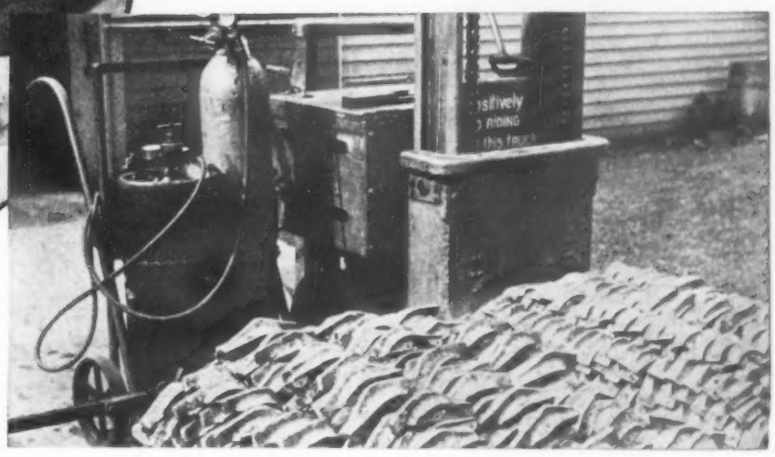
HAYNES STELLITED

Tail Skids—

they're in the Army Now



Below: Some of the 700 Haynes Stellited tail skids for United States Army planes.



THE United States Army has intensified its war on maintenance expense by ordering 700 Haynes Stellited tail skids for its planes.

Tail skids are exposed to terrific abrasion when a plane lands. The life of an unprotected skid is from 3 to 40 landings. Tail skids set with Haystellite and faced with Haynes Stellite average from 400 to 1000 landings.

Haystellite is a cast tungsten-carbide possessing great resistance to abrasive wear. Haynes Stellite is a cobalt-chromium-tungsten alloy in which great hardness is an inherent property and not the result of heat treatment. The combination of Haystellite and Haynes Stellite as a protective surface on metal parts exposed to extreme abrasive wear, even at red heat, increases the life of these parts many times.

These products can be applied easily and economically with the oxy-acetylene blowpipe to oil well drilling tools; excavating and mixing machinery; foundry, steel plant, and chemical processing equipment and farm implements. Wherever they are used, they insure maximum operating efficiency and decreased replacement costs.

Haynes Stellite Engineers will be glad to give you complete information.

Make this Red-Hardness Test Yourself

Deposit Haynes Stellite on a steel coupon . . . Place a ¼-in. bearing ball between the Haynes Stellited face and the face of a plain steel coupon . . . Squeeze tightly in a vise . . . The ball indents each surface slightly . . . Now heat the coupons red-hot and repeat . . . The Haynes Stellited surface retains its original hardness even at red heat.

HAYNES STELLITE TRADE MARK

A red-hard, wear-resisting alloy of Cobalt, Chromium and Tungsten

HAYNES STELLITE COMPANY

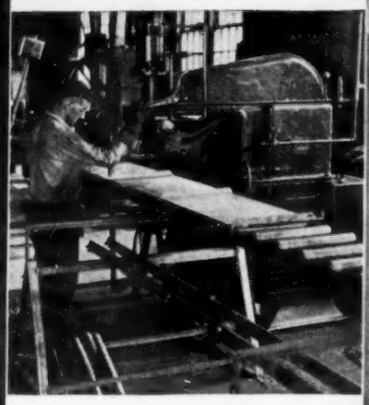
Unit of Union Carbide and Carbon Corporation

UCC

Chicago · Cleveland · Detroit · Houston · Los Angeles · New York · San Francisco · Tulsa

General Office and Works—Kokomo, Indiana

Haynes Stellite products are available also through the 42 apparatus shipping points of The Linde Air Products Company



DOORS with compartments between two hinged panels were developed 16 years ago, but it was only in the past year that the manufacturer brought out steel closets to be attached to doors in homes. Since then steel consumption for the latter type has progressed at a rate comparable with that for the hotel doors. Inset shows an adjustable roller table for spot welding for operations similar to those in making steel doors

Door Closets

◆

210th Article

Large Uses of Steel In Small Ways

BASED on recent yearly averages, approximately 250 tons of steel is consumed annually in the manufacture of the patented door closet known as the servidor, and a similar tonnage now is being used in the production of a new allied product known as the closidor. Normal annual output of servidors is 8000, and the average weight per unit is 60 pounds. Current production of closidors is at the rate of 14,000 a year, each unit weighing 33 pounds.

The servidor, a door having a compartment accessible from either side, was developed 16 years ago by the Servidor Co., with offices in New York and plant in Grand Rapids, Mich. More than 100,000 of these doors have been manufactured, one of the largest single orders being for 2200 for the Hotel New Yorker, New York.

Fabricating Details

These units are made to architects' specifications. The shells are No. 20 gage stretcher level furniture steel. Shelving, ventilator parts and certain other members are made of No. 22 gage or No. 24 gage steel strip. The supports for them are fabricated from cold-rolled strip. All hardware, except hinges and screws, is produced by the company, an important unit being the locking device, made of No. 14 gage cold-rolled steel, chromium plated.

The new closidors were brought out about three months ago. At first they were made in two types, one for bathroom, with space for rubber goods and toilet accessories, and the other for the kitchen with space for brooms, mops and other cleaning requisites. These units are made in standard sizes, 71 inches long and 18½ to 28½ inches wide, to be attached by means of hinges to any standard door. The kitchen door closet has a depth of 4⅝ inches, and that for the bathroom door a depth of 3½ inches. More recently two additional types have been added, one a buffet and the other a wardrobe closidor.

Welded Assembly

These closets, resembling shallow, oblong boxes, are made of practically the same materials as the servidors, the shells being cut from No. 20 gage stretcher level sheets, and the shelving from No. 22 gage material. The supports are 3/32 x 3/4-inch cold-rolled steel provided with rounded edges.

The company has found it profitable to purchase material in standard sizes, though there results a certain amount of waste scrap. The four major manufacturing operations comprise cutting, forming, spot welding and enameling, though there are 60 to 120 steps in these operations. The kitchen door closet requires only 60; the bathroom closet, 120. A still larger number is required in the production of the more elaborate servidors.

The servidors are sold mainly in large lots to hotels, but the closidors are being marketed through department and hardware stores, lumber companies, and some radio shops. More than a year was required in getting the design down to a point where the company believed it could be produced at a marketable price. The closidors are stocked in but one color, ivory, although a choice of colors is available for large orders.

Develops New Coating To Prevent Corrosion

For use wherever corrosion must be combated, the Skybrite Co., 1919 East Nineteenth street, Cleveland, has perfected a liquid coating known as Rust-Tox. This coating may be brushed or sprayed at any temperature above 35 degrees Fahr. and, according to the manufacturer, will effectively seal any rusted surface, prevent further rusting and prepare the surface for a long-life paint job.

The coating is colorless and transparent and before applying it is only necessary to brush off the loose scale. Rust spots are sealed and become chemically inactive. The manufacturer recommends the coating for use on new metal and in production, particularly in structural steel work.

Claims made for the coating are that it is heat resisting up to 550 degrees Fahr.; resists acid fumes, smoke, salt air and oxygen; bakes on at high heat under rivet heads and plate joints, leaving air-tight and water-tight joints; and is a good vehicle for aluminum flakes, red lead and graphite.

UNITED uses Timkens for modern roll neck economies

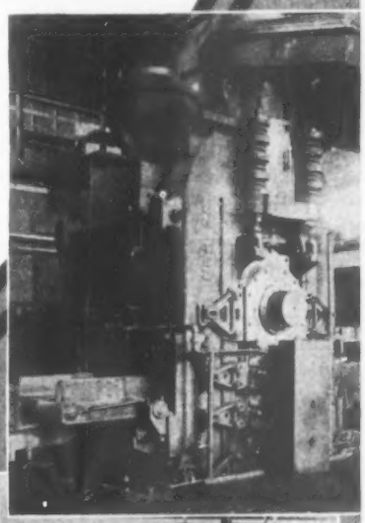
United Engineering and Foundry Company, Pittsburgh, Pa., has built and installed many rolling mills of various types equipped with Timken Heavy Duty Roll Neck Bearings, also a large number of auxiliary units.

This equipment is saving time and money for its users—and will save more as production demands increase. UNITED has selected Timkens because (1) Timken is the only type of bearing geometrically designed to carry all thrust, radial and combined loads within itself. No auxiliary supports such as thrust collars or thrust bearings are needed. (2) Timken is the only type of bearing that can be set up with extremely close radial running clearance and held to that clearance during its entire life.

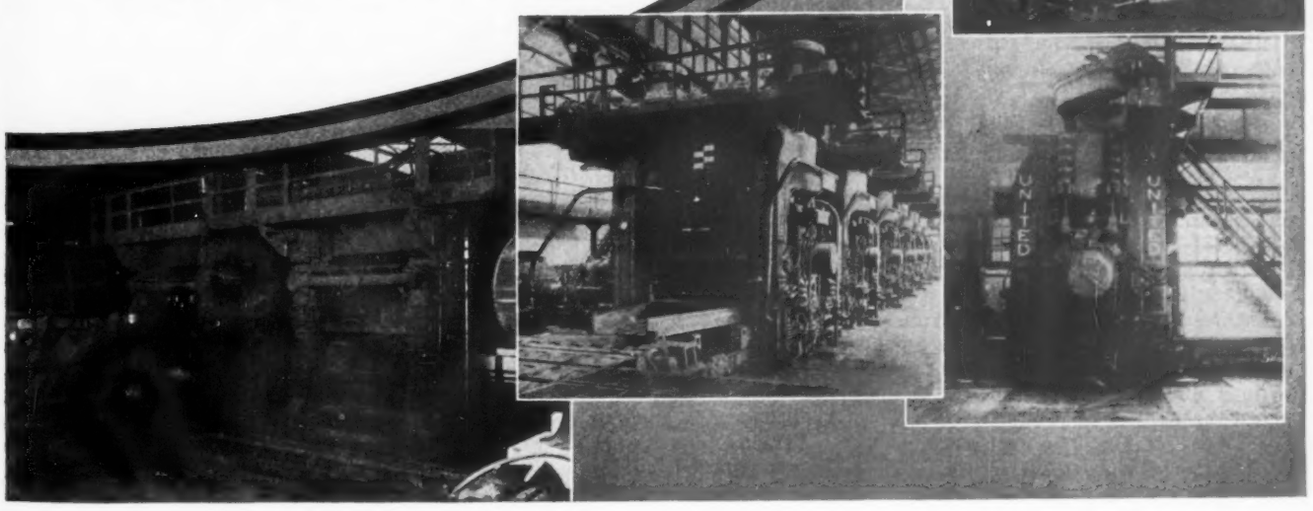
Let United's 30 years of experience in designing and building rolling mill equipment be your guide to modern anti-friction economies. Put your mills on Timkens. Consult the mill builder or get in touch with the Timken Engineering Department. The Timken Roller Bearing Co., Canton, O.

Prominent operators of UNITED *Timken-equipped rolling mills:*

American Rolling Mill Company, American Sheet & Tin Plate Company, Canada Wire & Cable Company, Ltd., Illinois Steel Company, Laclede Steel Company, National Electric Products Corp. Otis Steel Company, Timken Steel & Tube Company, Wallingford Steel Company, Washburn Wire Company, Western Cartridge Company, Westinghouse Electric & Mfg. Company.



TIMKEN *Tapered Roller* **BEARINGS**



Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Heat Treatment

Heat treatment of small tools with modern equipment and technique, by David A. Nemser, in Metal Progress, February, 1932, p. 23, 7 pp., 6 illusts.

Heat treating small steel tools is far from being an exact science, but within the past few years it has become a much more controlled art, attended by a notable advance in the quality of furnace room equipment. Some of these advances include automatic control on all types of furnaces, controlled atmosphere in electric box-type furnaces, electric resistors for high heats, and automatic timing for all operations. Much work remains to be done by the furnace builder and the metallurgist to perfect the equipment now available, for without question it still is possible to improve the metallurgical qualities of heat treated tool steels.

This article describes briefly the practice of small tool hardening at the Pratt & Whitney Co., Hartford, Conn. Products include taps, dies, milling cutters, reamers, chasers, end mills, counterbores, punches, and a line of miscellaneous small tools which are manufactured in large quantities. Three classes of steel are used for most of the tools—water hardening tool steel, either plain carbon steel or with small percentages of chromium or vanadium; oil hardening tool steel; and high-speed steel.

—STEEL, 2-8-32

Modernization

Modernizing the steel mill, in Mechanical Engineering, January, 1932, p. 35, 6 pp., 5 illusts.

An investigation was undertaken to determine the attitude of leaders of the steel industry regarding the approach of the up-slope of the present economic-cycle valley, with the idea that any new expenditure for plant improvement represents that much faith in the future of the country in general and the steel industry in particular. It was discovered that throughout the industry an earnest effort is being made to improve the quality of products, to put out new products where there is a market for them, and above all to cut the costs of production to the limit by reorganizing processes of manufacture and, where necessary, installing new machinery.

The South Chicago plant of the Illinois Steel Co. recently has made a number of important improvements, including installation of a new wide-flange-beam mill. General features of construction and operation of this mill are described.

—STEEL, 2-8-32

Die Tempering

Importance of the time factor in the tempering of dies, by Bernard Thomas, in Heat Treating and Forging, January, 1932, p. 35, 3 pp., 1 illust.

Generally speaking, the removal of stresses occupies only a minor part in the function of tempering a die and it is the major part which requires time to be achieved successfully. This factor of time has two reasons for its great importance: (1) Necessity of formation of the physical structures and properties for best results; and (2) size of the article being treated, a large die being calculated to lower the temperature of either the stove or the tempering medium and therefore requiring a longer time for the mean temperature to be attained.

In order that the best results may be obtained from a tempering operation it is necessary to determine what particular physical structure, or combination of structures, is most likely to suit the requirements. Having decided this point either by past experience or investigation, the necessary approximate temperature may be determined.

—STEEL, 2-8-32

Fatigue Failures

Failure of steel parts by fatigue, by H. W. Keeble, in Iron and Steel Industry (England), January, 1932, p. 165, 5½ pp., 8 illusts., 2 tables.

Fractures of steel as a result of alternating stresses are generally termed fatigue failures and are characterized by zonal markings which extend inward from the surface across the sectional area, and by an area of bright crystalline structure where absolute failure takes place. Testing of steels to obtain their fatigue limit stresses has not yet entered the sphere of routine commercial inspection. It now is mainly an academic test with the prospect of much practical use. This position results from two principal causes—the pronounced difficulty of devising test conditions similar to those which obtain under working conditions, and lack of knowledge concerning the complex stresses that exist in some moving members of machinery.

Fatigue research has revealed the phenomena of "understressing" and "overstressing," and also that of corrosive influences, although a comprehensive theory has yet to be postulated which incorporates these features. Stress localizations are the most prolific cause of failure by progressive fracture. Causes of stress localization may be grouped in three classifications—surface condition of the part, design of the part, and the condition of the material.

—STEEL, 2-8-32

Silicon Carbide

Silicon carbide refractory and its application in metallurgy, by H. R. Houchins and C. McMullen, in Metals and Alloys, January, 1932, p. 12, 3 pp., 1 table, 3 illusts.

Silicon carbide has a combination of physical and chemical properties which few other refractories can duplicate. In electric furnaces it has a place as an electrical resistance element that can be used where carbon or metallic resistors would be impractical. Bonded silicon carbide has been found ideal for muffle furnaces designed for hardening high-speed steel, and heat treating corrosion-resisting steel. Use of silicon carbide hearth tile and supports in heat treating furnaces is becoming standard practice.

The chemical nature of the material limits its use somewhat in iron melting furnaces. Both bonded silicon carbide and cements containing a large percentage of the carbide are used in the processing of nonferrous metals, and the material also has come into extensive use in the manufacture of graphite crucibles. Bonded silicon carbide also is adapted to use in recuperative installations and in protective tubes for thermocouples.

—STEEL, 2-8-32

New Equipment

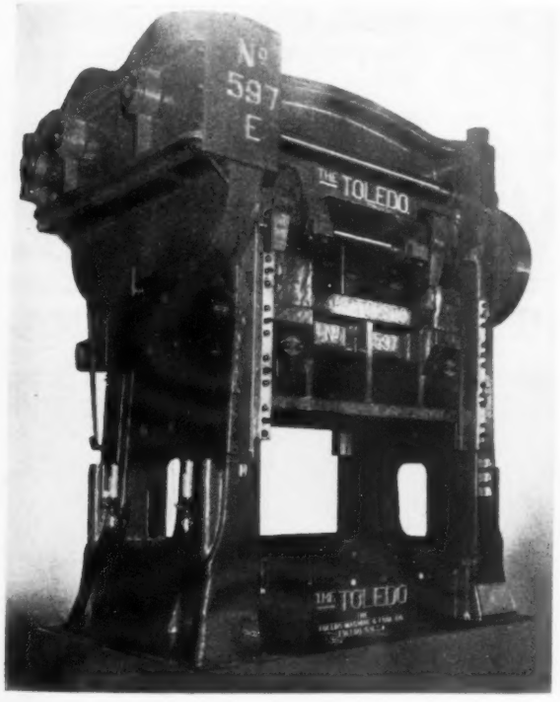
PRODUCTION FABRICATION TREATMENT FINISHING

New Press Is of Four-Point Suspension Type

Toledo Machine & Tool Co., Toledo, O., just has completed the development of a four-point suspension press. Crankshafts are geared together and synchronized to operate simultaneously, each of the four cranks exerting a direct and evenly distributed pressure at one of the four corners of the slide through the four connections. Connections are of an improved design and are adjusted at the same time by a motor mounted directly in the slide.

Clamping of adjustment screws is effected from the front and back of the press. Back slideways have removable wearing strips. These features maintain the slide parallel at all times, even on work which may be done at the front or back edges of the sheet. Thus it will be seen that this type of press is specially adapted for blanking, forming and stamping pieces of large area, particularly with reference to the front to back dimensions of the pieces to be operated upon.

The accompanying illustration presents a good idea of the general appearance and massiveness of this press. An important feature is that in addition to the main tie-rods which take the load, there are four supplementary tie-rods which add materially to the stiffness of the frame. Driving mechanism is all overhead and away from the operators. The clutch is the magnetic multiple disk flywheel type, a solenoid also controlling the brake mechanism which is synchronized to operate in harmony with the clutch.

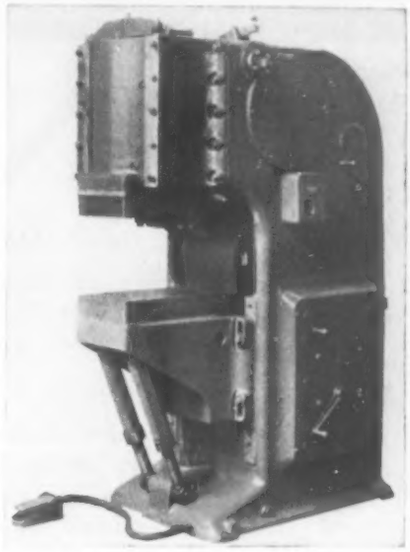


WEIGHING approximately 300,000 pounds, this large Toledo four-point suspension press has a bed area of 80 x 120 inches; opening in bed, 60 x 112 inches; area of slide, 75 x 113 inches. In the bed are located the air cylinders, and the design is such that as to reduce the depth of the pit to a minimum. The slide is counterbalanced by two air cylinders which are built into the crown

Projection Spot Welder Has Unique Features

Taylor-Winfield Corp., Warren, O., has announced a new heavy duty multiple projection spot welder adaptable to operations where it is desired to make a large number of projection welds at one time. The machine, shown in the accompanying illustration, is available with transformer capacities ranging from 200 to 450 kilovolt-amperes inclusive, and with throat depths of 18, 24, 30, or 36 inches. Also, a nine-step, self-contained heat regulator is mounted on the side of the machine, providing a wide range of adjustment for various sizes of stock.

The mechanical drive of the welder is simple with a speed control



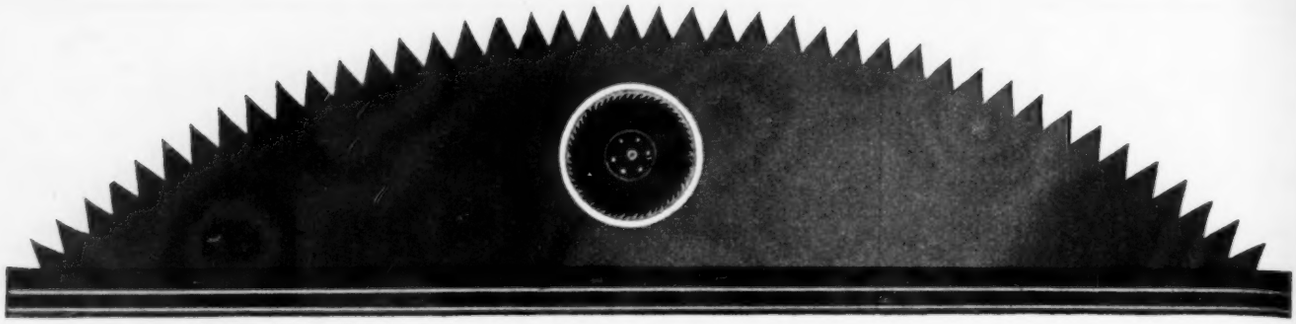
Heavy duty spot welder built by Taylor-Winfield Corp.

built into the machine, whereby any desired speed from 7 to 54 strokes per minute may be obtained by turning the handle on the side of the frame. Pressure is applied to the slide by a cam working through a toggle directly in line with the center of the slide. Any pressure up to 8000 pounds may be applied to the slide.

An effective stroke-changing device is built into the welder so that any length stroke between 1 and 2¾ inches may be obtained. The clutch control consists of a foot pedal connected by a flexible cable so that it may be moved around on the floor to the most convenient position for the operator. This cable releases the clutch and positive action is assured when it is depressed. When the pedal is held down the welder runs continuously, otherwise it makes one cycle and stops.

New Blast Mill Uses Sand Or Steel Abrasive

Parsons Engineering Corp., Cleveland, has developed a new blast mill, using either sand or steel abrasive to clean castings and other miscellaneous work. The mill oscillates only through 120 degrees, thus allowing the entrance of a number of either pressure or gravity nozzles along the

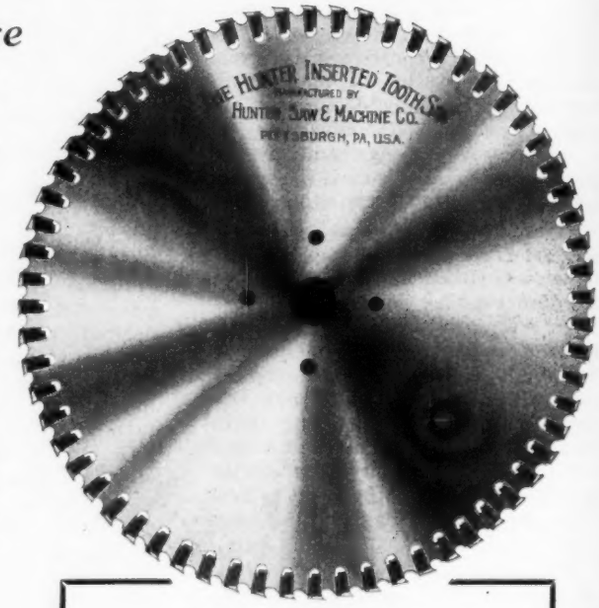


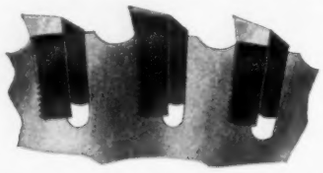
HUNTER Beskut

A Saw Designed for Modern Usage

A modern inserted tooth saw with ample strength and rigidity to operate successfully on the latest model high power cold saw machines.

The tooth and lug structure on the Beskut are especially sturdy, the bottom of the tooth has a solid bearing on the saw body and the face of the tooth shank and the corresponding surface of the body are serrated. The resulting interlock insures one piece rigidity of the saw during the heaviest cut while the design and construction permit adjustments up and down the serrations as needed. Teeth are ground in place—in fact the saw is to all intents and purposes a solid piece except when tooth adjustment or replacements are required.





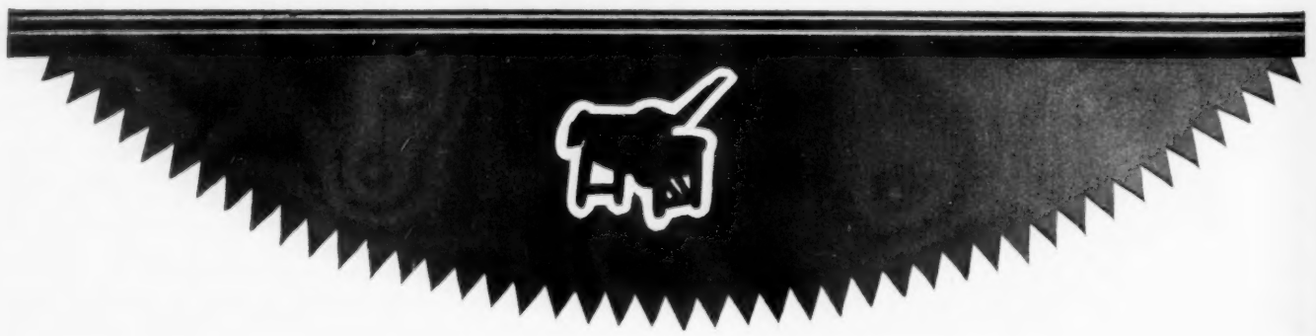
Here is a tool that is equal to the demands of the latest cold sawing machines. We'd like to send complete details to every saw user.

HUNTER

High Speed Metal Cut Off Saws, Saw Grinders, Circular Milling Saws, Pneumatic Rivet Sets, Chisel Blanks, and Hardened Steel Specialties.

HUNTER SAW AND MACHINE CO.

5656 BUTLER STREET, PITTSBURGH, PENNA.



length of the barrel. The nozzles oscillate with the barrel and direct the blast to the moving center of the load.

The movement of the load is controlled by the lapped lining plates or lifters, which work the castings only on the forward stroke. On the reverse stroke the load slips over the lifters in much the same manner as the operation of a pipe wrench. The fast cascading of the work past the direct blast line of nozzles occurs only for a short period at the top of the forward stroke. During three-quarters of the cycle the mass is moving slowly past the direct blast line, giving a thorough cleaning.

The barrel is supported on heavy duty roller bearings and oscillates ten times per minute. The driving mechanism is fully enclosed and the crank and gears are lubricated by a positive pump and splash oiling system. A special brake mounted on the drive shaft, and direct connected to the motor, stops the barrel at any desired point. For unloading, the door is opened and when the barrel is oscillated to a low position, the load is discharged by gravity. The unit is shown in the adjacent column.

Dust caused by the blasting operation is removed by air which enters openings in the barrel at the drive mechanism end and is exhausted from the enlarged elevator section at the opposite end.

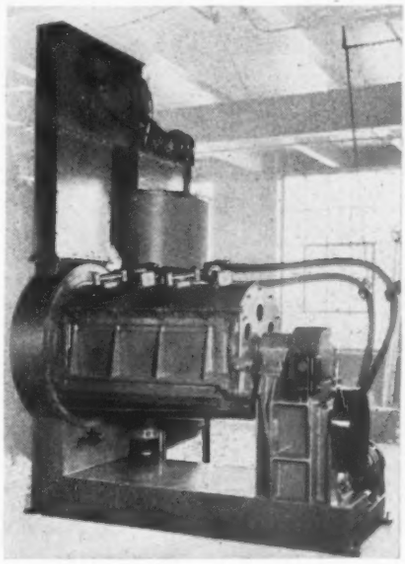
◆

Control Is Centralized On Multiple Driller

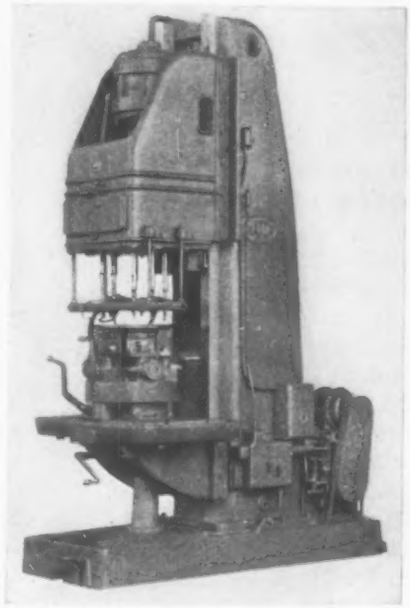
National Automatic Tool Co., Richmond, Ind., recently developed a new hydraulic multiple drilling machine designed particularly for fixed center operation. It is so constructed that the various cluster boxes are easily changed to conform to each individual job. Hydraulic feeding pressure is supplied by a high pressure volumetric pump. Control is centralized, the machine being operated by a single foot treadle located within easy reach of the operator's right foot, as can be seen by referring to the accompanying illustration which is shown at the right.

Ways on which the slide traverses are 18 inches wide and 1¾ inches thick. Wear on the ways is compensated for by a gib, which is adjusted by means of headless set screws. The standard motor housing is mounted on the upper portion of the slide, allowing the necessary space on the lower portion of the slide for the mounting of the cluster boxes.

Table is of the adjustable knee type. It is gibbed in the same manner as the slide. Raising and lowering the table is accomplished by means of a removable crank, which is located at the front of the knee. This crank turns the adjusting screw thru the horizontal shaft and bevel gears. Two T-slots run across the table from right to left for clamping purposes. Motions of the head are controlled by a sliding valve with a rapid forward, feed, reverse and stop. The valve is mounted on the side of the pump. Movements of the valve are controlled by a trip mechanism of the load and fire types. This trip mechanism is mounted on the right hand side of the column and is linked up with a foot treadle at the front of the base.



Oscillating blast mill developed by Parsons Engineering Corp.



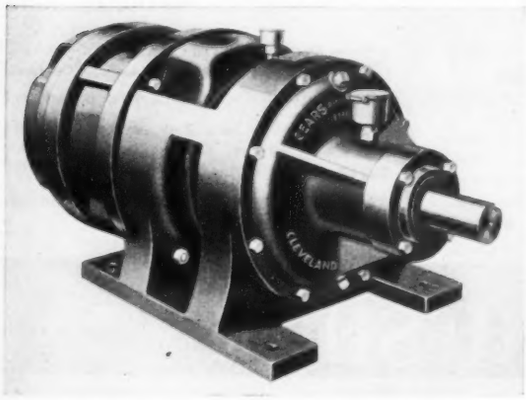
Multiple drilling unit introduced by National Automatic Tool Co.

◆

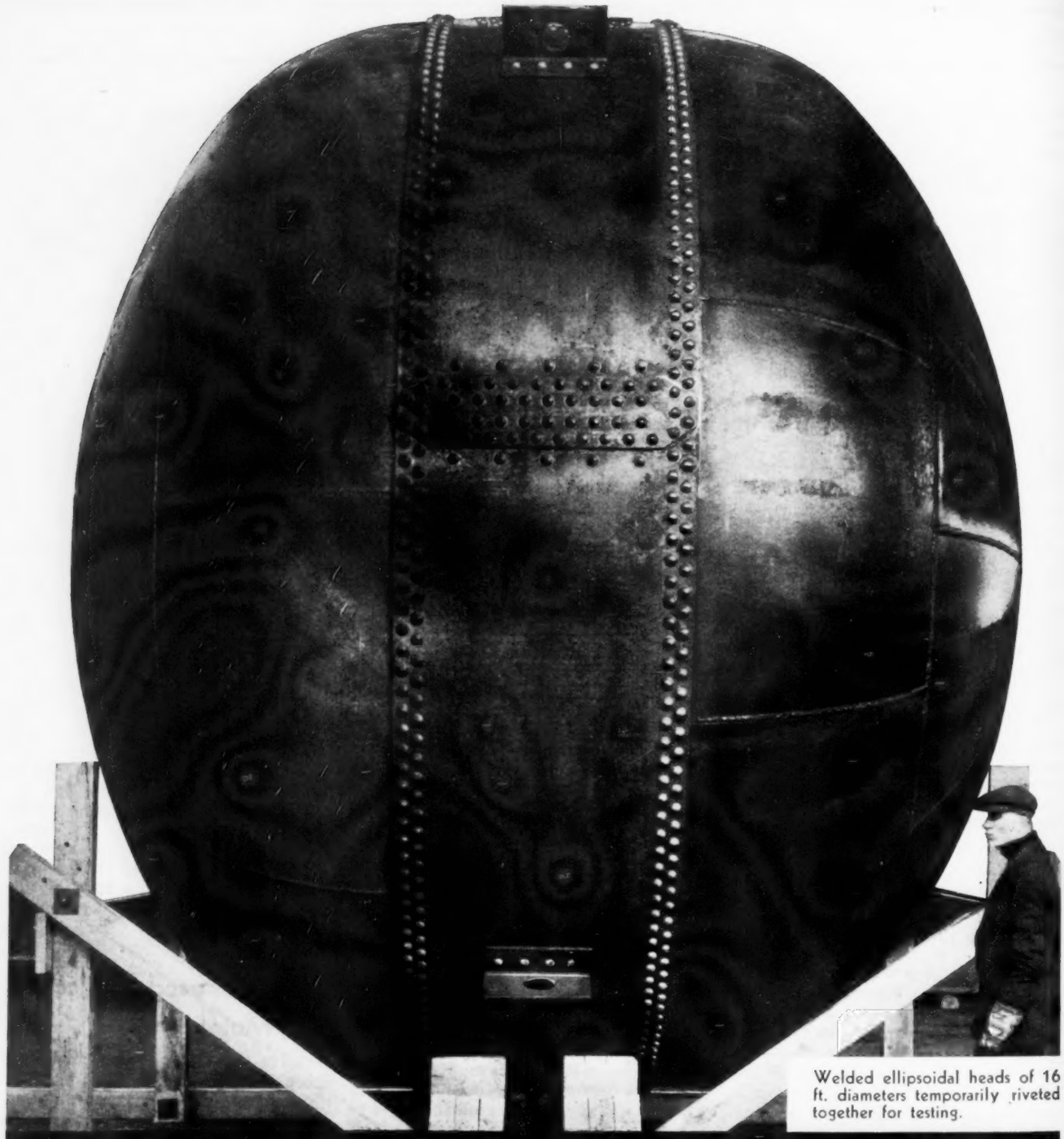
Planetary Speed Reducers Are Motorized

Gears & Forgings Inc., Cleveland, has placed on the market a speed reducer of the planetary type built integral with an electric motor, forming a single and compact unit known as a motorized speed reducer. This self-powered and self-contained type of speed reducer shown at left, is designed particularly for applications where available space for the driving mechanism is limited.

The housing of the reduction gears is dust proof and oil tight. It is integral with the base which extends to the center line of the motor and also provides rigid support to gearing and output shaft which carries the load. No additional loads are imposed on the motor shaft which is supported by two ball bearings. These motorized speed reducers are made in 34 standard ratios ranging from 4:1 to 240:1 inclusive, and in sizes from ¼ to 30 horsepower.



MOTORIZED planetary speed reducer developed by Gears & Forgings Inc., employs a dust-proof and oil-tight housing. Thirty-four standard ratios are available, in sizes from ¼ to 30 horsepower



Welded ellipsoidal heads of 16 ft. diameters temporarily riveted together for testing.

STEEL PLATE CONSTRUCTION

McCLINTIC-MARSHALL, by reason of long experience in handling all types of steel plate construction, a force of skilled workmen, and unmatched fabrication and erection facilities, is exceptionally well qualified to meet the requirements of users of steel plate work.

McClintic-Marshall Steel Stand Pipes, Penstocks, Stacks, Oil Tanks, Gas Holders and High-Pressure Cylinders, as well as similar products made of steel plate, are fabricated to customers' designs in the Leetsdale, Pa., Works, the largest plant in the world devoted entirely to steel plate construction. McClintic-Marshall's Hay Works at Newark, N. J., is advantageously located to fill promptly orders for light steel plate work in the Metropolitan area.

McCLINTIC-MARSHALL CORPORATION
Subsidiary of Bethlehem Steel Corporation
General Offices: Bethlehem, Pa.

District Offices in New York, Boston, Philadelphia, Baltimore, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis, San Francisco, Los Angeles

Export Distributor: Bethlehem Steel Export Corporation, New York City

McClintic-Marshall

Steel Gaining, but at Slower Rate

Ingot and Castings Output Up in January; Active Blast Furnaces Increased—Operations Steady—Efforts Are Renewed To Stabilize Prices

STEEL producers have practically exhausted the momentum generated by the post-holiday rise and have reached a stalemate requiring heavier demands from the automotive industry and seasonal track requirements of the railroads to break.

Railroad buying appears a certainty, though in lesser degree than a year ago, so soon as adjustments following the wage reduction are made. The continued absence of Ford is a drag not only to the steel markets but also to other low-price automobile manufacturers.

In the two weeks ended Feb. 6 the average rate of steel production was 28½ per cent. Last week Pittsburgh and Youngstown mills curtailed, but a substantial rise at Chicago and Buffalo proved an offset. This week Cleveland and Chicago mills may taper off but a further rise at Buffalo is expected to maintain the average.

Sentiment continues moderately strong. January output of steel ingots, on a daily basis, was 56,203 tons, compared with 50,092 tons in December, making January a 26.54 per cent month, or 3 points higher than December.

Even in pig iron, where the daily rate declined in January, favorable factors are in the ascendancy. For the first time in 10 months there was a gain in the number of stacks active, indicating improvement in February. The January daily iron rate was 31,336 tons, 0.9 per cent below December.

Constructive forces are at work on the price situation. Weakness is manifest in finished steel as well as raw materials, but a pretentious effort to stabilize may be undertaken shortly. Due to a reduction of $1 a ton in sheet bars at Cleveland and Youngstown; $2 a ton in cast iron pipe at Chicago, and 50 cents in malleable iron at Youngstown and Pittsburgh, STEEL'S iron and steel composite is off 32 cents to $29.60. The finished steel composite is down 60 cents to $46.62, and steelworks scrap composite reduced 7 cents to $7.89.

By saving $210,000,000 through wage reductions, and increasing their revenue $100,000,000 from previous rate advances the railroads will acquire a sum nearly equal to their 1930 iron and steel expenditures, though financial rather than physical rehabilitation evidently will be their first objective. Several western roads expect to spend their wage savings in track maintenance work. Loans from the Reconstruction Finance Corp. will be asked by the Pennsylvania to carry on a huge construction program. Southern Pacific railroad is in the market for 20,000 tons of rails, but rail orders in volume are not expected to materialize for several months.

Structural shape awards at 14,386 tons are up moderately from the preceding week; the total for this year to date is little more than half that in the comparable period last year. Bridge and government work is providing 10,000 tons on inquiry at Chicago; bids are being taken on 5000 tons for the Franklin memorial building at Philadelphia. Favoring a more active construction market, hourly wage rates in more than 30 building trades in 21 leading cities show an average reduction of 25 cents this year.

Apparently the only reverberation from the Sino-Japanese clash felt so far in the American steel industry is suspension of a few steel shipments to Shanghai, due to uncertainty in delivery. No war orders have been placed, though Japan's importation of 16,348 tons of lead, 82 per cent of this country's exports in 11 months last year, now is regarded as significant. In 1931 China took 47,700 tons of iron and steel, and Japan, 99,045 tons, combined representing 15 per cent of this country's exports.

Composite Market Averages

	Feb. 6	Jan. 30	One Month Ago (Jan., 1932)	Three Months Ago (Nov., 1931)	One Year Ago (Feb., 1931)	Ten Years Ago (Feb., 1922)
Iron and Steel Composite	$29.60	$29.92	$29.98	$30.61	$31.65	$32.86
Finished Steel Composite	46.62	47.22	47.28	48.17	49.42	50.29
Steelworks Scrap Composite	7.89	7.96	8.03	8.22	10.39	11.16

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Feb. 6, 1932	Jan., 1932	Nov., 1931	Feb., 1931
PIG IRON				
Bessemer, del. Pittsburgh	$17.26	17.26	17.76	18.51
Basic, valley	15.00	15.00	15.00	16.75
Basic, eastern del. eastern Pa.	16.00	16.00	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.76	17.26	17.76	18.01
No. 2 foundry, Chicago	16.50	16.50	17.00	17.50
*Southern No. 2, Birmingham	11.00	12.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	16.01	18.26
Malleable, valley	15.50	16.00	16.50	17.25
Malleable, Chicago	16.50	16.50	17.00	17.50
Lake Superior, charcoal, del. Chi.	23.04	22.44	25.04	27.04
Gray forge, del. Pittsburgh	16.63	16.63	17.13	17.38
Ferromanganese, del. Pittsburgh	79.85½	79.85½	89.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.25	2.35	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	25.00	26.00	29.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	27.50	29.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.50	29.00	30.00
Wire rods, Pittsburgh	37.00	37.00	35.00	35.00

	Feb. 6, 1932	Jan., 1932	Nov., 1931	Feb., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.55	1.60	1.65
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.81	1.81	1.89	1.94
Iron bars, Chicago	1.70	1.60	1.65	1.75
Shapes, Pittsburgh	1.50	1.55	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.69½	1.81
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.55	1.60	1.65
Tank plates, Philadelphia	1.69½	1.69½	1.73½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.75	1.75	1.85	1.90
†Sheets, No. 24, hot. ann., Pitts.	2.15	2.20	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.70	2.80	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.45	2.55	2.50
Sheets, No. 24 galvan., Chi.	2.95	2.95	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.75
Heavy melting steel, eastern Pa.	7.35	7.50	7.95	10.50
Heavy melting steel, Chicago	7.00	7.20	7.65	9.85
No. 1 wrought, eastern Pa.	9.00	9.35	9.50	11.00
No. 1 wrought, Chicago	7.25	7.25	8.00	9.25
Rails for rolling, Chicago	10.00	10.25	10.00	12.10

Sheets

Market Is Less Active, with Automotive Orders Lacking—Prices Continue Under Pressure

SHEET PRICES, PAGE 49

Pittsburgh—Sustained betterment in automotive sheet demand is lacking and although specifications from some interests are well maintained the market is slightly less active than during the preceding several weeks. Releases by the Ford Motor Co. are as light as formerly while orders from a few interests have declined. Little change is noted in demands from other large sheet consumers. Electric refrigerator manufacturers are fair buyers but activity of steel furniture, farm implement and electrical equipment manufacturers is quiet. Prices show occasional weakness although recent quotations generally are unchanged. The usual market is 2.15c for hot-rolled annealed sheets; 2.80c for galvanized; 1.60c for No. 10 hot-rolled, and 2.80c for autobody. Long terms are easier. Operations are unchanged at 25 per cent.

Buffalo—Orders from automotive, furniture and some other lines are slightly higher, with producers looking for increased operations before the end of the month.

Philadelphia—No. 10 hot rolled sheets still are quotable at 1.55c to 1.65c, Pittsburgh, though the trend is toward the lower figure. Other prices are unchanged. Business is quiet. The ability of the seller to make quick deliveries sometimes is the deciding factor.

New York—Sheet prices are steadier. A slight increase is noted in demand for galvanized.

Lock-Joint Pipe Co., Ampere, N. J., is inquiring for 600 tons of sheets for a government pipe job, Washington.

Youngstown, O.—Sheet mill operations continue irregular, some independent mills doing fairly well while others have been forced to reduce. Discouragement is not general, for even the automotive industry is expected to do better in March, and meanwhile other lines continue to absorb considerable tonnages. It is a question whether the lack of demand for automotive sheets is due to hesitation by automobile builders until the new Ford model appears or to light demand for their cars. A slight improvement is noted in specifications for galvanized. Quotations appear steadiest on galvanized, around 2.80c, Pittsburgh; No. 24 hot-rolled annealed ranges from 2.15c to 2.35c; and autobody, from 2.80c to 3.00c.

Cleveland—The tone of the market continues to improve, but prices are unsettled. Some mills continue to note figures lower than 2.15c, Pittsburgh, for black sheets, and it is reported that one mill will retire from the unprofitable production of black sheets as soon as its backlog is rolled. Barrel manufacturers are inactive. Galvanized sheets are reported at 2.80c, Pittsburgh. Other sheet prices are unchanged.

Cincinnati—Heavier bookings, especially from automotive sources, have improved sheet mill production in this district. Most buying is for early needs.

Chicago—Sheet mill production at 25 per cent is down slightly from a week ago. This is due to a falling off in miscellaneous orders. Refrigerator makers are maintaining steady specifications. Jobber buying is light. No. 24 hot-rolled annealed are 2.30c to 2.40c mills; other prices also are unchanged.

St. Louis—Sheet consumers covered their early requirements in January, the volume of orders considerably larger than in December and comparing favorably with January a year ago. New business recently has tapered. Prices are unchanged.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.60c to 1.70c
Gary, Ind. Harbor, base	1.70c to 1.80c
Chicago, del.	1.75c to 1.85c
New York, del.	1.95c to 2.00c
Birmingham, base	1.75c to 1.85c
Philadelphia, del.	1.86c to 1.96c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.75c to 1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.01c to 2.11c
New York, del.	2.10c
St. Louis, delivered	2.12½c
Birmingham	2.00c
San Francisco c.i.f.	2.35c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.15c to 2.25c
Gary, Ind. Harbor, base	2.30c to 2.40c
Chicago, del.	2.35c to 2.45c
New York, del.	2.60c
Philadelphia, del.	2.56c
Birmingham, base	2.45c to 2.55c
St. Louis, del.	2.62½c
San Francisco, c.i.f.	2.90c

GALVANIZED NO. 24

Pittsburgh, base	2.70c to 2.80c
Gary, Ind. Harbor, base	2.90c to 3.00c
Chicago, del.	2.95c to 3.05c
Philadelphia, del.	3.01c to 3.11c
Birmingham, base	3.05c
St. Louis, del.	3.17½c
San Francisco, c.i.f.	3.40c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.55c to 2.65c
Pitts., No. 20 light	3.15c to 3.25c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.50c to 2.55c
Gary base	2.65c to 2.75c
St. Louis, del.	2.87½c

HEAVY COLD ROLLED NO. 10

Pittsburgh base	2.20c to 2.30c
Gary, Ind. Harbor, base	2.35c to 2.45c
Chicago, del.	2.40c to 2.50c
Philadelphia, del.	2.56c to 2.66c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.95c to 3.05c
Chicago, del.	3.00c to 3.10c
Philadelphia, del.	3.16c
New York, del.	3.10c
St. Louis, del.	3.22½c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Gary, Ind., base 10 cents higher	
Long ternes, 24, unassorted, 2.75c to 2.95c	

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind. Chicago, $1 over Pitts-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c
Philadelphia, base	1.69½c
New York, delivered	1.80c
Boston, delivered	1.92c to 2.02c
Chicago, base	1.70c
Cleveland, del.	1.70½c
Lackawanna, N. Y. base	1.60c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.60c
Pacific Coast, c.i.f.	1.80c to 1.85c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c
Philadelphia, del.	1.65c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.70½c
Lackawanna, N. Y., base	1.60c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.05c
Do., wide flange	2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.50c
Chicago, base	1.70c
Birmingham, Ala., base	1.70c to 1.75c
Lackawanna, N. Y., base	1.60c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.55c
Cleveland, base, out. del.	1.55c
Philadelphia, del.	1.81c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c to 2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.75c to 2.00c
Chi., rail steel	1.55c to 1.80c
Chi., rail steel, bridges and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo.
		1.25-1.75 Ni. 1.05
2000	0.25	5100 .80 - 1.10
2100	0.55	Cr. 0.45
2300	1.50	51.00 Cr.
2500	2.25	spring 0.20
3100	0.55	6100 bars 1.20
3200	1.35	6100 Spring 0.95
3300	3.80	Cr., Ni., Van. 1.50
3400	3.20	Carbon Van. 0.95
4100 .15 to .25		9250 (flats) 0.25
Mo.	0.50	9250 (rds.,sq.) 0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.50c to 1.55c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.45c
Hot strip to 6 in. Chi.	1.65c to 1.70c
Do, 6 1/16 to 24 in.	1.55c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons, over	2.15c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread.....73, 10 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list .....73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....73, 10 and 10 off
Tire bolts .....60, 10 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73, 10 and 10 off

HEXAGON CAP SCREWS

Milled .....80-10-10-5 off
Upset 1 in. diam. and smaller....85-10 off

SQUARE HEAD SET SCREWS

Milled .....80-5 off
Upset, 1 in. and smaller.....80-10-5 off
Upset, larger than 1 in.....80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh.....2.50c
Do. less carloads, 5 kegs or over..2.75c; less than 5 kegs, 2.90c.
Chain, BB, BBB, 9/16-1⅛ in....33 1/3 off
Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Specifications Fairly Steady With Large Consumers Lagging —Prices Generally Easier

BAR PRICES, PAGE 49

Chicago—Western automotive parts business is tapering, but bar mill production still is scheduled at 30 to 35 per cent. All the larger implement works except one are operating at 15 to 20 per cent, but it is probable several will go down early in March because of unsold stocks of implements and tractors. A shade more business is coming from railroad shops. Producers find the increased shipping orders of the last three weeks, due to automotive and miscellaneous manufacturing, maintaining prospects of at least another week on the same basis. Bar mills lead in heavy finished activity. Soft steel bars are quoted 1.70c, Chicago. Bar iron producers have stiffened quotations to a base of 1.70c, following the recent advance of carbon steel bars. Rail steel bar mills at Chicago Heights are producing at 25 to 30 per cent, but lack the usual run of steel fence post demand.

New York—With jobbers and the bolt and nut makers, the two largest consuming groups of steel bars in this district, showing little interest, demand is dull. Prices are unchanged at 1.50c, Pittsburgh, or 1.85c, delivered.

Lock-Joint Pipe Co., Ampere, N. J., is inquiring for 600 tons of bars for a government pipe job, Washington.

Pittsburgh—Steel bar specifications are fairly steady. Seasonal improvement is lacking in requirements of most large consumers. The market shows a slightly easier tone and although 1.60c still is quoted in some instances the range continues 1.50c to 1.60c.

Youngstown, O.—Soft steel bar orders have shown some expansion but specifications continue to be put forward cautiously. Small bar mill operations have expanded slightly here. Common steel bars are 1.50c to 1.60c, Pittsburgh.

Cleveland—Soft steel bar specifying, largely buoyed by one account on automotive work, has been increasingly better for several weeks. Ordering is for 60 and 90 days ahead. For the run of small-sized orders in the open market today 1.55c, Cleveland base, applies for outside and local deliveries.

Production of Wabana ore in Newfoundland totaled 537,000 short tons in 1931, compared with 1,424,000 tons in 1930, according to George C. Cobb, vice consul, St. John's. Mines were shut down or on half-time during part of the year.

Tin Plate Consumption Likely To Be Under 1931

Tin Plate Prices, Page 49

New York—Uncertainty as to the ability of some of the smaller packers to finance their operations continues to becloud the outlook for tin plate. It appears certain, however, that consumption will fall substantially under that of last year. One large can company which usually produces about 50 per cent of its own requirements has curtailed its operations 10 per cent, for the first time in several years, and has reduced its usual contracting with outside companies. The leading buyer of tin plate is expected momentarily to announce its season's requirements; meanwhile, this interest is placing specifications against tentative contracts.

Pittsburgh — Tin plate production has declined to an average of about 35 per cent, co-incident with a falling off in specifications and the appearance of a less favorable outlook regarding 1932 vegetable packs. Tin plate operations ordinarily show improvement in February but little, if any, increase now is looked for. The official market on tin plate continues $4.75, Pittsburgh, per base box.

Cold Finished Bar Market Still Spotty

Cold Finished Prices, Page 49

Pittsburgh — Cold-finished bar specifications lack improvement, business during the past week declining slightly below the January average. Demand from the automotive industry is spotty, requirements of some interests being lighter than a month ago. Demands of miscellaneous consumers show little change. The market continues 2.00c Pittsburgh.

Cleveland—Little of consequence in either new orders or inquiry is noted in the market for cold-finished steel bars. Automotive requirements are expanding gradually. The price is 2.00c, Cleveland base.

Plates

Few Contracts Being Placed— Prices Continue To Show Some Weakness But Are Holding

PLATE PRICES, PAGE 49

New York—Some sellers report an improvement, although in general trading is spotty with plates 1.60c, Coatesville, Pa., in carlots.

Brooklyn, N. Y., navy yard closes bids Feb. 9 on 53 tons of plates.

Boston—Plate buying is dull, several of the regular consumers being practically out of the market. Shipyards are not active. Some tonnage is going into tanks, including 170 tons for five at the Lever Bros. plant at Cambridge. Bridgeport Boiler Works has booked a small government tank contract. Prices are unchanged and untested.

Cleveland—If uneasiness over price were dissipated it is believed that dragging pending jobs and inquiries would be closed. Plate mills are kept busy figuring possible prospective work. Present orders are only sufficient to keep plate mills busy 12 to 24 hours, rarely longer. Indicative of present run of orders was one last week from a prominent down-state steam shovel maker for four plates, whereas carload quantities formerly were specified. Otis Steel Co.'s 112 and 152-inch Lakeside mills went on Feb. 4 on an order accumulation. On some lots 1.60c, Pittsburgh is quoted but 1.50c to 1.60c rules.

Philadelphia—Maryland Dry Dock Co., Baltimore, has been awarded a contract for reconditioning a river boat requiring 350 tons of pickled plates, the pickling probably to be done by the drydock. Miscellaneous demand is quiet and the market is unchanged at 1.60c, Coatesville, Pa., for carlots.

Pittsburgh—Plate demand is slow, showing little change. Railroad requirements continue light, but the barge market is slightly more active as a result of an award of 12 cargo barges involving 1700 tons of plates and shapes. Prices are slightly easier, the former 1.60c price finding less

application with 1.50c more representative of the market.

Chicago—Possibilities of further improvement are seen in plates for oil tanks, although the refinery market is spotty. The oil industry is expected to benefit from the tendency of the last two years toward merging of large companies, which may prove beneficial in removing uncertainties. Local mills have booked 2000 tons of tank plates for East Texas refineries in miscellaneous lots. Plate prices are nominal at 1.70c, mills. Mill operations are variable.

Contracts Placed

1700 tons plates and shapes, 12 cargo barges for Campbell Transportation Co., Pittsburgh, to Mariettta Manufacturing Co., Pt. Pleasant, W. Va.

1200 tons, plates and shapes, helium gas holder, navy airport, Sunnyvale, Calif., to Stacey Mfg. Co., Cincinnati.

165 tons, five tanks, Lever Bros., Cambridge, Mass., to Hodge Boiler Works; Temple & Crane Co., Boston, general contractor.

100 tons, water tank, navy airport, Sunnyvale, Calif., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Manganese Ore Stocks Large; Buying Is Slow

Iron Ore Prices, Page 56

New York — With consumers' stocks piled high, little improvement in manganese ore buying is expected during the first half this year. Current prices are nominal, Caucasian ore, 52 to 55 per cent, finally being reduced 2 cents to the theoretical level of 24.00c including duty. South African manganese ore is unchanged at 23.00c to 24.00c for 52 per cent; 22.00c to 23.00c for 49 to 51 per cent; and 21.00c to 21.50c, for 44 to 47 per cent. Indian manganese ore, 48 to 50 per cent, is nominally 24.00c; and Brazilian, 46 to 48 per cent, 20.00c to 21.00c.

Preliminary trade estimates place total importations of metallurgical manganese ore to this country last year at 522,000 gross tons. Of this amount approximately 189,000 gross tons came from Russia. In 1929 the imports from Russia totaled approximately 338,000 tons, and in 1930 about 231,000 tons.

Importations of ferromanganese in 1931, according to preliminary estimates, aggregated 18,653 tons and importations of iron ore, 1,387,000 tons, against 2,775,124 tons in 1930 and 3,139,334 tons in 1929.

Railroads

Three Western Roads May Enter Car Market — Bethlehem Steel Gets 7500 Tons Rails

TRACK MATERIAL PRICES, PAGE 49

New York—The Chicago wage adjustment has improved sentiment in railroad supply circles. Generally, sellers of railroad supplies are expecting an improvement. Car builders are less hopeful. While some specifications may develop, they look for little substantial business over the next few months, although there may be an increase in car repair work in which they may participate. Domestic freight car awards in January involved 159 cars, comparisons following:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	.....	50	17,027	15,944
March	.....	2,166	6,118	12,023
April	.....	2,798	1,997	8,205
May	.....	20	1,392	7,562
June	.....	1,910	998	5,886
July	.....	617	1,389	341
Aug.	.....	1,304	1,111	2,854
Sept.	.....	703	576	4,517
Oct.	.....	980	4,116	19,506
Nov.	.....	35	2,621	6,361
Dec.	.....	11	2,729	9,710
Total	.....	10,694	45,146	106,105

Delaware, Lackawanna & Western has purchased from the Bethlehem Steel Co., Bethlehem, Pa., 500 kegs of cut spikes, 500 kegs of screw spikes, 112,000 tie plates, 40,000 rail anchors and 30,000 track bolts.

Pittsburgh — Although believing the recent rail wage adjustment is a constructive step toward increased purchases by the carriers, mills look for little change in demand in the near future. Current specifications continue light and inquiry is little changed.

Chicago—Several western railroads state they will spend savings from the wage cuts for track maintenance, but this may not be increased until spring maintenance work is begun, as existing maintenance is restricted to necessary work. Chicago & Eastern Illinois will have $1,000,000 available and Santa Fe, $6,000,000. Western Fruit Express having awarded 100 underframes of its inquiry for 300 to the western shops of Pressed Steel Car Co., will place 200 later. The Gary, Ind., rail mill will resume this week, due to more releases on old orders, after a shutdown of several weeks for the first time in over a year. Reports of a car inquiry from Santa Fe again are being revived. The number of cars contemplated has not been announced. Speculation is heard of a possible car inquiry from Chicago & North Western, as that road has scrapped 18,000 cars in the last year.

Cleveland—Erie railroad has come into the market for tie plates in a qauntity sufficient to accompany its recent rail purchase of 33,200 tons. Inquiry has not yet been made for spikes or rail anchors. Rail inquiry from the Nickel Plate has not definitely materialized, although previous expectations of 18,000 to 20,000 tons for 1932 seem fairly well founded.

Car Orders Placed

Thunder Bay Quarries Co., subsidiary of Diamond Alkali Co., Fairport, O., four dump cars, to Koppel Car Repair Co., Koppel, Pa.

Rail Orders Placed

Interborough Rapid Transit, New York, 7500 tons, to Bethlehem Steel Co., Bethlehem, Pa.

Rail Orders Pending

Southern Pacific railroad, 20,000 tons.

Wire and Nails Hold Place, With Price Steady

Wire Prices, Page 49

Chicago—Wire products continue to gain slowly, while manufacturers' wire demand is off. No. immediate plans have been made for increasing production as stocks are fairly well balanced, although low. Plain wire at 2.25c, Chicago or western mills, is untested. Wire nails are quoted $1.95 in carload lots.

New York—Nail sellers are looking for an early seasonal increase in demand. It is believed there will be sufficient construction and repair work to give the nail market a test, something that the new price of $1.95, Pittsburgh, has not had. Wire is unchanged at 2.20c, Pittsburgh.

Philadelphia—Some moderate nail tonnages have been placed at $1.95, Pittsburgh, the first test this year. Wire is 2.20c, Pittsburgh.

Pittsburgh—Some specifications for wire products are being received against contracts and prices are steady. The market continues $1.95 to jobbers for wire nails. Manufacturers' wire is moving slowly at 2.20c, with little change in demand.

Structural Shapes

Plain Material Settles to 1.50c, Pittsburgh — Withdrawal of Government Work at New York Leaves Dull Market — Figure 5000-Ton Philadelphia Job

STRUCTURAL SHAPE PRICES, PAGE 49

New York—Activity in structural steel in this territory has slumped to the lowest point in years. Private enterprise is doing little construction, and public work, the backbone of the market for more than a year, has slowed up. Lettings are few in number, most jobs being light in tonnage. Plain material prices are unchanged, but keen competition for available volume weakens fabricated material. An effort is being made to license and classify contractors for public work in an effort to eliminate the more irresponsible elements, reflected in a growing list of abandoned public building contracts.

Boston—Tonnage let is heavier due to closing on 1800 tons for the department of public works building. This went to the Allentown, Pa., fabricator through F. V. Warren Co., Philadelphia, contractor. Other awards are for small lots. Fresh inquiry is light, limited largely to small postoffice tonnages. Prices on plain material are steady, but fabricated prices are easy.

Philadelphia—Bids on approximately 5000 tons, the largest noted here in some time, will be opened Feb. 24 for the Franklin memorial building. Bids are being taken for the fourth time on 400 to 500 tons for the Pottstown, Pa., high school, and for the third time on 900 tons for the Darby, Pa., mercy hospital.

Pittsburgh — Structural steel inquiry and awards hold at about their former volume, with little change noted in specifications for plain material. Shape prices are slightly easier, in that 1.60c is less commonly quoted to smaller buyers. The market generally is 1.50c.

Cleveland—Several projects are being planned but have not reached the bidding stage. One is for a grade crossing elimination for the Erie railroad at Nunda, N. Y., and the other a 1000-foot bridge of reinforced steel and structural shapes between Twenty-sixth street and Pittsburgh avenue, Cleveland, for the city. A building at Toledo, O., is pending. Plain material is 1.50c to 1.60c, Pittsburgh.

Chicago—Bridge work and government building projects provide about 10,000 tons of prospective work in structural steel market. This includes 4100 tons for the Manheim road bridge, Chicago, which has been readvertised several times. About 1500 tons is active for a custom house in Chicago, while about ten small industrial projects are of 50 to 75 tons each. Oak Park, Lake Forest, Wheaton and Harvey, Ill., and Davenport, Iowa, Terre Haute, Ind., and Beloit, Wis., post office projects are before the market. Shape prices show another tendency toward weakness, but 1.70c mills still is quoted for new business. Low bids on several projects are under old steel contracts, protected before the price advance to 1.70c.

Contracts Placed

2000 tons, power house for Milwaukee Electric Railway & Light Co., Milwaukee, to Worden-Allen Co., Milwaukee.

1950 tons, postoffice, Portland, Oreg., to Poole & McGonigle, Portland; Murch Bros., St. Louis, contractors.

1800 tons, department of public works building, Boston, to Lehigh Structural Steel Co., Allentown, Pa.; F. V. Warren Co., Philadelphia, contractor.

1800 tons, Rufus King high school, Milwaukee, to C. Hennecke Co., Milwaukee.

1082 tons, Union club, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

950 tons, pier sheds 144-5-6, Los Angeles, to McClintic-Marshall Corp., Bethlehem, Pa.

665 tons, state highway bridges, Ohio, to several fabricators, including 171 tons to International Derrick & Equipment Co., Columbus, O., and 160 tons to Champion Bridge Co., Wilmington, O.

600 tons, addition to Los Angeles Gas & Electric building, Seal Beach, Calif., to unnamed interest. Plain material to be furnished by Columbia Steel Co., San Francisco.

590 tons, Winchester, Pa., viaduct, to McClintic-Marshall Corp., Bethlehem, Pa.

485 tons, bridge, Brazos river, Young county, Tex., to Petroleum Iron Works, Beaumont, Tex.

400 tons, incinerator plant, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.

260 tons, Kress store, Hilo, T. H., to Virginia Bridge & Iron Co., Roanoke, Va.

243 tons, span over Patuxent river, Md., for state road commission, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

200 tons, school, Pompton Lakes, N. J., to Passaic Steel & Iron Co., East Rutherford, N. J.

200 tons, tipple for Linton-Summitt Coal Co., Latta, Ind., to Joseph T. Ryerson & Son, Inc., Chicago.

200 tons, assembly hall, state hospital, Central Islip, Long Island, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.; Longacre Engineering & Construction Co. Inc., contractor.

200 tons, pumping station, Fort Wayne, Ind., to unstated.

150 tons, warehouse and factory, Dubuque, Iowa, to Clinton Bridge Works, Clinton, Iowa.

140 tons, building unit, Mattewan state hospital, Beacon, N. Y., to Bethlehem Construction Co., Bethlehem, Pa.

110 tons, bridge, Springfield, O., Clark county, to Burger Iron Co., Akron, O.

101 tons, produce warehouse and canopies, Somerville, Mass., to New England Structural Steel Co., Boston.

100 tons, bridges, Johnson county, Oklahoma, to Capitol Steel Co., Oklahoma City, Okla.

100 tons, storage building for Standard Silica Co., Ottawa, Ill., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, store, Rockford, Ill., to Mississippi Valley Structural Steel Co., St. Louis.

100 tons, transmission towers, Keokuk, Iowa, to McClintic-Marshall Corp., Bethlehem, Pa.

Awards Compared

	Tons
Awards, week ended Feb. 6	**14,526**
Awards, week ended Jan. 30	**10,536**
Awards, week ended Jan. 23	**16,163**
Awards, this week in 1931	**17,044**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932....	**15,074**
Av. weekly awards, Jan.	**16,346**
Total awards to date, 1931	**152,133**
Total awards to date, 1932..	**90,447**

Contracts Pending

2700 tons, pier, Clyde-Mallory line; bids in.

1500 tons, United States custom house, Chicago; Burnham Bros. Inc., and Carr & Wright, Chicago, architects.

1000 tons, exposition building for Sears, Roebuck & Co., Chicago, on Century of Progress grounds, Burnham park, Chicago.

900 tons, mercy hospital, Darby, Pa.; bids being taken for third time. Now reinforced concrete may be used.

700 tons, postoffice, Davenport, Iowa.

650 tons, 1932 bridge requirements for Sante Fe railroad.

600 tons, Ford Motor Co. service building, Alexandria, Va.; general contract bids Feb. 14. Bids opened at Detroit.

500 tons, postoffice, Terre Haute, Ind.

500 tons, office buildings, Ione, Wash.

500 tons, first unit of Chrysler Motor Co. plant, Los Angeles; plans being prepared.

425 tons, bridge, Niles, O., for Trumbull county; E. H. Latham & Co., Columbus, O., contractor. Bids of Feb. 2.

400 to 500 tons, high school, Pottstown, Pa.; bids being taken for fourth time.

350 tons, Episcopal church, Philadelphia.

350 tons, postoffice, Cumberland, Md.

325 tons, gymnasium and auditorium, Fort Lee, N. J.

308 tons, piling, dam No. 4, Monongahela river, Pennsylvania; Dravo Contracting Co., Pittsburgh, general contractor.

300 tons, bridge over Russian river at Geyserville, Calif.; plans being prepared.

250 tons, highway bridge, Pen d'Orielle county, Washington.

200 tons, apartment building, Brooklyn, N. Y.

200 tons, bridge, Rock creek park, Washington.

200 tons, highway bridge, Joplin, Mo., for Missouri highway commission.

200 tons, hangar for Goodyear Tire & Rubber Co., municipal airport, Chicago.

200 tons, filtration plant, Lancaster, Pa.; E. S. Worfel, Lancaster, contractor.

200 tons, airway beacon towers, department of commerce; Lehigh Structural Steel Co., Allentown, Pa., low.

175 tons, extension to pier shed No. 2, foot of Grove street, Oakland, Calif.; bids Feb. 8.

140 tons, bridge over San Antonio creek, Santa Barbara county, Calif.; bids Feb. 17.

125 tons, state bridge, Maryland; bids asked.

115 tons, library, Girard college, Philadelphia, instead of 300 tons recently reported.

110 tons, pavillion, Revere, Mass.

Simpson Heads Foundry Equipment Association

Foundry Equipment Manufacturers' association, meeting at Cleveland Feb. 5, elected the following officers: President, H. S. Simpson, National Engineering Co., Chicago; vice president, H. S. Hersey, C. O. Bartlett & Snow Co., Cleveland; directors, the foregoing and H. J. Koch, Fort Pitt Flask Equipment Co., Pittsburgh, T. W. Pangborn, Pangborn Corp., Hagerstown, Md., and R. T. Turner, Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y. D. M. Avey, editor The Foundry, Cleveland, is secretary-treasurer.

C. E. Hoyt, secretary, American Foundrymen's association, discussed the forthcoming convention and exhibition at Philadelphia, May 2-6.

Ohio Foundrymen To Meet

Cleveland — The first sectional meeting of the Ohio Foundries association in 1932 will be held at Hotel Gibson, Cincinnati, Feb. 25, it is announced by Robert Hoierman, secretary. Safety probably will be the chief topic.

Blaw-Knox Co., Pittsburgh, has declared regular quarterly of 12½ cents a common share, payable March 2 to record Feb. 15.

Concrete Bars

Public Work Delayed—Week's Awards Small, Led by 675-Ton Purchase—Chicago Prices Ease — New Volume Light — Niles, O., Bridge Pending

REINFORCING BAR PRICES, PAGE 49

New York—Volume in concrete reinforcing bars is light, considerable public work being held in abeyance. Prices on ordinary tonnages, smaller lots which make up the bulk of business at this time hold at 1.95c, mill lengths, delivered New York, although on more than 100-ton shipments shading prevails. New inquiry is light. Several federal jobs at Washington require close to 750 tons.

Boston—For a bridge substructure and viaduct at Westfield—West Springfield, Mass., 350 tons went to Concrete Steel Co. Lettings, outside this award, are few in number and in small lots. Prices are easy on attractive tonnages. Inquiry is down.

Philadelphia—The market is 1.60c, Pittsburgh, on mill lengths, subject to concessions on desirable tonnage. Award of 400 tons for the Lancaster, Pa., filtration plant is outstanding in an otherwise dull market.

Buffalo—Demand for reinforcing bars continues slow. Schedules of production indicate that practically nothing is being purchased in the district.

Pittsburgh—Reinforcing bar business is slow and little change is noted in inquiry or in shipments against old orders. This district is lacking in awards of more than 100 tons. The general market continues 1.60c, Pittsburgh.

Cleveland—Considerable interest was shown by contractors in the Trumbull county, O., letting of Feb. 2 for the Niles, O., bridge. E. H. Latham & Co., Columbus, O., took the general contract and will buy 425 tons of reinforcing, some bids of less than 2.00c, delivered at Niles, having been entered. Ten contracts for the construction of roads and one bridge will be let by the Ohio highway department Feb. 16.

Chicago—Bids on several pending reinforcing bar projects, including 400 tons for a telephone exchange building in Chicago, disclose prices $2 to $3 a ton under prevailing quotations, but these projects have not been closed. Nevertheless, prices show weakness despite higher prices quoted on the new cards issued as of Jan. 1. About 450 tons in Illinois road work is being distributed.

Awards Compared

	Tons
Awards, week ended Feb. 6	2,795
Awards, week ended Jan. 30	3,701
Awards, week ended Jan. 23	5,562
Awards, this week, 1931....	4,631
Av. weekly awards, 1931	6,808
Av. weekly awards, 1932....	5,838
Av. weekly awards, Jan.....	7,144
Total awards to date, 1931	41,284
Total awards to date, 1932	35,033

Contracts Placed

675 tons, mail-handling building, Cincinnati union terminal, to Pollak Steel Co., Cincinnati.

525 tons, sewer, Tenth avenue and Forty-ninth street, Manhattan, New York, to National Bridge Works, Long Island City, N. Y.

500 tons, sewage disposal plant, Lancaster, Pa., to Edwards Steel Co., Columbia, Pa.

450 tons, Illinois road work, to several unstated fabricators.

350 tons, substructure and viaduct, state project Westfield-West Springfield, Mass., to Concrete Steel Co., New York; Fred T. Ley & Co., Springfield, contractor.

150 tons, pier shed 144-5-6, Los Angeles, to unnamed interest.

150 tons, clinic, San Diego, Calif., to unnamed interest.

135 tons, building, Somerset, Mass., for First National Stores, to Joseph T. Ryerson & Son Inc., Chicago, through Turner Construction Co., general contractor.

110 tons, school, Whitehaven, Tenn., to Laclede Steel Co., St. Louis, through B. E. Buffaloe & Son, Memphis, Tenn., contractors.

100 tons, bridge over Sorrento canyon, San Diego county, Calif., to unnamed interest.

100 tons, concrete piling for wharf, El Dorado Oil Co., foot of Adeline street, Oakland, Calif., to Gunn, Carle & Co., San Francisco.

Contracts Pending

425 tons, bridge, Niles, O., for Trumbull county; E. H. Latham & Co., Columbus, O., contractor. Bids of Feb. 2.

300 tons, exchange building for Illinois Bell Telephone Co., Winnetka, Ill.

270 tons, barracks, Bolling Field, Washington; bids in.

250 tons, addition, Library of Congress, Washington.

250 tons, science building, California In-

stitute of Technology, Pasadena, Calif.; plans being prepared.
200 tons, sewage system, Coatesville, Pa.
150 tons, physics building, University of California, Los Angeles; bids Feb. 5.
100 tons, San Gabriel dam No. 2, Los Angeles county, Calif.; bids Feb. 8.
Unstated tonnage, postoffice, Harvey, Ill.
Unstated tonnage, postoffice, Oak Park, Ill., to cost $600,000.

Semifinished Sales Slow; Prices Easy

Semifinished Prices, Page 56

Pittsburgh — Semifinished steel sales are quiet and unchanged, with prices rather spotty. Shipments reflect the continued low rate of finishing mill operations. Producers usually quote $27 for rerolling billets and $26 for sheet bars, although occasional reports of concessions are heard. Forging billets hold at $34 with wire rods $37.

Youngstown, O.—Little action is apparent in the semifinished steel market here. Nonintegrated sheet mills are taking definite small lots of sheet bars for quick delivery, and strip mills are doing likewise with billets and slabs. Billets and slabs have settled to $27, Youngstown, Pittsburgh and Cleveland, while sheet bars are $25, Youngstown and Cleveland.

Cleveland—Sheet bars have been reduced $1 a ton to $25, base, Cleveland and Youngstown, O. The market for billets and slabs also is easier. The leading merchant producer continues to operate six of its 14 open hearths.

Chicago — Shipments of semifinished steel again have tapered. Sheet bars show weakness, due chiefly to the influence of a lower market in the East. A straight $28, Chicago, is now more general for sheet bars.

Bolt, Nut, Rivet Prices Weak in Slow Market

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh — Specifications for bolts, nuts and rivets are dull, with recent activity showing little change from January. Quiet demand from jobbers indicates no improvement in miscellaneous consumption, while railroads remain poor buyers. Rivets are fairly steady at 2.25c, Pittsburgh, for the structural grade, but bolts and nuts continue weak at 73, 10 and 10 off.

Cleveland—In spite of reports from other districts, local producers have not officially revised their discounts, and bolts and nuts generally are 73, 10 and 10 off list. For large and attractive specifications, there is no doubt, however, that an extra 5 points is being granted, though this situation is not changed from that prevailing for some time.

Chicago—Further gains are noted in specifications for bolts, nuts and rivets. A steady improvement has been shown in the last three weeks. Producer operations still are below 30 per cent. Concessions are frequent from the 73, 10 and 10 discount for bolts and nuts, but rivet prices remain steady.

Pipe

Birmingham, Ala., Base on Cast Cut — Figure Chicago-Detroit Line, 25,000 Tons Steel

PIPE PRICES, PAGE 60

New York — The Phillipsburg, N. J., foundry is low on approximately 700 tons for Newark, N. J. Cast pipe buying is gradually slowing up. Nearby inquiry is less than 2000 tons, including about 350 tons for the navy which may be for delivery in the west. It now appears that A. M. Byers Co., Pittsburgh, is low on 700 tons of wrought pipe for Panama, the low bid submitted by Amerian Cast Iron Pipe Co., Birmingham, Ala., being for cast iron. Prices on the latter are easy.

Boston—Metropolitan water district, Hartford, Conn., has bought 365 tons of class C cast pipe from a New Jersey foundry.

Pittsburgh—Pipe is in a quiet market. Mills have but little business in line pipe on which to figure while demand for other products is dull and unchanged. Stocks of jobbers and consumers are light and their orders are for immediate needs. Line pipe inquiries are expected to make their appearance within the next 30 days.

Chicago — Cast water pipe prices are off about $2 a ton on the basis of bids in this market. Chicago delivered quotations for 6 to 24-inch now are $38.40 to $40.40. Several municipal projects are pending, including 3000 tons of 6 to 12-inch for St. Louis county, Mo. Panhandle Eastern Pipe Line Co., subsidiary of Missouri-Kansas Pipe Line Co., Chicago, is figuring on a 25,000-ton, 20-inch steel natural gas line from Chicago to Detroit, although this project is not active.

Birmingham, Ala.—Lettings have eased, though bids are out on several specifications which promise to develop. Base price is reduced to $32-$33 on six-inch and over sizes with $36-$37 on four-inch pipe. Operations of pipe shops are under 40 per cent of capacity.

Cast Pipe Placed

1200 feet, 20-inch water pipe, Dunkirk, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.
365 tons, mostly 12-inch, metropolitan water district, Hartford, Conn., to R. D. Wood & Co., Emaus, Pa.
155 tons, 4 to 8-inch class 150, Orange county waterworks district No. 5, Santa Ana, Calif., to Pacific States Cast Iron Pipe Co., Provo, Utah.
125 tons, 4 and 6-inch class 150, Brea, Calif., to National Cast Iron Pipe Co., Birmingham, Ala.
124 tons, 2 to 12-inch class B, Long Beach, Calif., harbor commission to unnamed interest.

Steel Pipe Placed

175 tons, up to 8-inch, wrought iron, inland freight terminal, port authority, New York, to Reading Iron Co., Reading, Pa.; partial requirements, Jarcho Bros. Inc., heating and plumbing contractors.

Cast Pipe Pending

2441 tons, 18 and 20-inch class B, Signal Hill, Calif.; American Cast Iron Pipe Co., Birmingham, Ala., low.
550 tons, up to 10-inch, Camillus, N. Y.; bids Feb. 16.
500 tons, 4 to 12-inch, Brooklyn Borough Gas Co., Coney Island, N. Y.
350 tons, mostly 10-inch, navy department, New York.
250 tons, 6 and 10-inch, Morgan City, La.
220 tons, 4 and 6-inch, Corpus Christi, Tex.; alternates on steel and wrought iron.
150 tons, 6-inch, Lynn Gas & Electric Co., Lynn, Mass.; bids in.
100 tons, 10-inch, Essex Falls, N. J.; bids in.
Unstated tonnage, approximately 13 miles, up to 16-inch, Hawthorne, N. Y.

Steel Pipe Pending

25,000 tons, 20-inch pipe line from Chicago to Detroit, for Panhandle Eastern Pipe Line Co., subsidiary of Missouri-Kansas Pipe Line Co., Chicago; project being figured but not active.
850 tons, 18 and 20-inch, welded steel pipe, Signal Hill, Calif.; Los Angeles Mfg. Co., Los Angeles, low.
700 tons, mostly 16-inch, Panama, three classes, schedule 2718; American Cast Iron Pipe Co., Birmingham, Ala., low, bidding cast iron; A. M. Byers Co., Pittsburgh, low on wrought iron with total of $93,592.70.

Strip

Irregular Demand Gives Spotty Production—Small Orders Rule —Prices Weak and Unchanged

STRIP PRICES, PAGE 49

Pittsburgh—Automotive releases of strip steel were slightly heavier during the past week. Total demand still is light and reflects uneven operations. Strip mills lack improvement and vary from week to week, with the general average around 20 to 25 per cent. Prices lack strength, being unchanged at 1.40c to 1.45c and 1.50c to 1.55c for hot strip and 1.90c to 2.00c for cold-rolled strip.

Philadelphia—Strip steel presents no feature and buying is light. Hot-rolled is quoted at 1.40c to 1.45c and 1.50c to 1.55c, Pittsburgh for wide and narrow. Cold-rolled strip is 1.90c to 2.00c, Pittsburgh.

Youngstown, O. — While some makers of strip steel have received good mill orders and are operating at fairly satisfactory rates, others have not been so favored. However, miscellaneous lines of strip consumption are taking up a portion of the slack resulting from tapered automotive demand. Narrow hot-rolled strip is 1.50c to 1.60c, Pittsburgh; the wider widths being 1.40c to 1.50c. Cold-rolled ranges from 1.90c to 2.00c, Pittsburgh, and 2.00c to 2.10c, Cleveland.

Cleveland—Hot-rolled strip generally is 1.45c and 1.55c, Pittsburgh, with usual concessions on attractive business. Cold-rolled sellers say they have not seen a carlot order in many months. On cold-rolled, 2.00c, Cleveland, appears general One automobile lamp manufacturer has been an active hot-rolled buyer recently.

Operations, 28.5 Per Cent, Hold This Week

Pittsburgh—Changes in operating schedules last week were downward. Ingot production again is lower at 23 per cent, down 2 points, while the banking of a blast furnace brings the total of active steelworks stacks to 9 of 54. This equals the previous low record. No marked change is in prospect for the coming week. Tin plate output declined several points to 35 per cent, with sheets continuing at 25. Strip and pipe hold at 20 to 25 per cent.

Buffalo — Operations will be 16 points higher this week than at the same time a week ago, estimated open hearth schedules for Feb. 8 being at 35 per cent of capacity. The increase is due partly to staggered operations and partly to the addition of other units, there being 13 open hearths scheduled for production.

Philadelphia—Production in eastern steel plants was unchanged last week at 18.5 per cent of capacity. No early increase is expected.

Youngstown, O.—Steel ingot output here last week averaged 35 per cent, off one point, with little change expected this week. Sheet mill operations will expand this week, while pipe output, bolstered by greater activity in butt-weld, is expected to hold. Twenty-four of 68 open hearths will melt at the beginning of this week, one less than a week ago. Last week a district melter dropped one blast furnace for repairs. Negotiations to acquire the Waddell unit, Niles, O., of Empire Steel Corp. and place it in operation have encountered financial difficulties.

Operations, week of Feb. 6	**28.5**
Operations week of Jan. 30	**28.5**
Operations, week of Jan. 23	**27**
Operations, this week, 1931	**48**
High, 1931-32 (March 19)	**57**
Low, 1931-32 (Dec. 26)	**15-20**

Cleveland—Steel production at four district plants averaged 40 per cent last week, against 38 per cent the preceding week. This week the rate will return to 38 per cent. Corrigan, McKinney Steel Co. ran six open hearths, with a seventh on for two days in the middle of the week; Otis Steel Co. operated three, and American Steel & Wire Co., four open hearths through the past week.

Chicago—While ingot production is scheduled at 27 per cent this week, slightly under the week just closed, finishing mill output remains unchanged. Some of the ingot production is being stocked. Illinois Steel Co. still has five of its 27 steelworks furnaces active, while independents have four operating, making nine of the district's 36 stacks in. Rail mill operations this week will be on a schedule of 15 to 20 per cent. Rail production had been down entirely for several weeks.

Birmingham, Ala.—With six open hearths on at Ensley, Ala., and four at Fairfield, Ala., for Tennessee Coal, Iron & Railroad Co., and three of six open hearths producing at Gadsden, Ala., for Gulf States Steel Co., the 60 per cent ingot operating rate was maintained last week. A downward revision is expected this week, unless new business is booked.

Warehouse Seasonal Products Gain Slowly

Warehouse Prices, Page 60

New York—Orders are few and small. While sheet prices are unchanged, they are shaded. Jobbers here feel that sales would in no way be stimulated by any price revisions.

Philadelphia—Trading is steady. Sellers are expecting a mild improvement as February progresses. Prices are unchanged.

Pittsburgh—Business is dull, with practically no improvement noted over the past several weeks. Small orders predominate. Prices are unchanged.

Detroit — Daily steel sales from stock are somewhat improved over the January rate. It is anticipated sales will be better within another month when Ford Motor Co. will have become more settled on its program.

Cincinnati—Warehouse steel is in restricted demand, tonnage being comparable so far with the January rate. Quotations are steady.

Chicago—January sales of warehouse products were only a shade above December. Demand for usual seasonal products is not shaping up according to expectations. Prices are fairly steady, except for bolts and nuts.

St. Louis—Seasonal quiet is more pronounced than in recent years. Purchasing centers in small lots for prompt shipment.

New Sharon Mill Ready

Sharon, Pa.—Sharon Steel Hoop Co., Sharon, rolled the first strip steel, about 250 tons, on Feb. 3 from its new four-high strip mill which has just been completed. The mill is an extension to its present continuous mill and consists of four stands of four-high mills instead of former two-high stands. Strip up to 20 inches can be rolled, also down to No. 20 gage. An inspection by company officials was held Feb. 4.

Manganese ore of good quality is said to have been discovered near Lemmon, S. Dak., by J. A. Winefordner and O. S. Quammon, of Lemmon.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Valley furnace	15.50
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00 to 12.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00
Pittsburgh, delivered	17.13 to 17.63
Pittsburgh, furnace	16.50

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	16.00
Pittsburgh, delivered	16.63 to 17.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.32
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00
Chrome ore, 48% net ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	29.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	25.00
Cleveland	25.00
Chicago	28.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	79.85½
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molyte, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	18.50

Pig Iron

Shipments Continue to Expand —Machinery Builders Increasing Melt—Malleable Lower

PIG IRON PRICES, PAGE 56

Pittsburgh—Pig iron buying is off slightly, business placed recently lacking improvement over the volume of recent weeks. Small foundries have little occasion to place additional orders in view of the continued low rate of operations, while nonintergrated steelworks are covered for an extended period ahead. Iron on a recent inquiry of a radiator manufacturer went to an outside furnace. Prices continue largely nominal, being regulated to a certain extent by competition from Cleveland and Buffalo producers.

Boston—Pig iron sales continue in small lots aggregating less than 1000 tons for the week. Buffalo and Mystic prices are fairly steady, but southern iron is easy. Buffalo is close to $15, furnace, for delivery here while the range for local iron is around $17, furnace. No. 2X southern has been offered at $15.75, delivered.

Philadelphia — Eastern Pennsylvania iron is easy at $14.50 to $15, base, furnace. Orders are comprised mainly of carloads.

Frank Samuel & Co. is low on 50 tons of foundry iron for Brooklyn navy yard at $22, delivered. Navy closes Feb. 16 on 50 tons of foundry iron for Mare Island, Calif., and 27 additional tons for Brooklyn.

Buffalo—Operations at blast furnaces are being stepped up considerably without the addition of new units to the active list. Buying shows signs of improvement. The district price is firm at $16, with $14.50 to $15 quoted on iron for eastern shipment.

Youngstown, O.—More activity is discernible this week in the valley pig iron market. One lot of 200 tons of bessemer was sold by a valley furnace to a melter in the Pittsburgh district at round $17, delivered, which maintains the 50-cent differential with the Pittsburgh producers, netting the valley furnace a few cents under $16. Some malleable has been reported sold at slightly under $15.50 valley, but this lacks confirmation. No. 2 foundry is $15.50 to $16, valley. As it has been several weeks since a valley basic sale was made, the quotation of $15, furnace, has become nominal.

Cleveland—Sales have slowed up slightly from the average of recent weeks, furnace interests with headquarters here booking approximately 8500 tons in the past week. A southern Ohio melter is understood to have placed 1000 tons. Inquiries also have slackened. Shipments, however, are being made at a higher daily rate than in January and producers expect the total for the month will exceed that of January. Prices hold at $16, base, Cleveland furnace, for local delivery, and $15 to $15.50, base, lake furnaces, for shipment in competitive districts. Competition between northern producers of silvery iron has resulted in sales of 7, 8, 9 and 10 per cent grades at about $19.50, furnace and 15 per cent at $23 to $24. Jackson county producers, however, have not changed their prices on silveries or bessemer ferrosilicons.

New York—The market is, dull with orders small and inquiries negligible. Buffalo iron is easy at $14.50 to $15, base, furnace. Southern is $15.50, delivered, New York docks.

Cincinnati—Sales of pig iron in this district have improved, last week exceeding 2000 tons, including 650 tons of northern iron to an Indiana melter, and 500 to a southern Ohio consumer. Some furnace interests report they are rejecting second half bookings at first half prices. Shipments are moderately improved.

Chicago — Surveys of February shipping requirements disclose possibility of moderate delivery gains this month. Some Ford business in ferroalloys and silvery iron has been released here. Revised January shipping figures indicate that the gain over December was about 10 per cent. Industrial machinery builders are increasing their melt, and gains from railway supply companies are expected soon. Farm equipment makers are showing no gains and some may close next month. Prices of higher silicon merchant iron usually figure back to less than $16.50, the Chicago quoted price, but buyers have been unsuccessful in getting base iron under that figure. Southern iron remains $10, base Alabama furnace.

St. Louis—Jobbing foundries report unfilled orders are running low and new business is disappointing. Most of the stove plants continue idle. Some of the implement manufacturers are making up stocks. Releases of castings for the automotive industry are much below expectations. Pig iron shipments are holding up fairly well, but melters are less disposed to anticipate their requirements. Rumors of less than $10, furnace, on southern iron cannot be confirmed. Northern prices are unchanged.

Birmingham, Ala.—Consumers are buying only for immediate requirements. A number of small sales in the Middle West and East are noted. Prices are steady.

Toronto, Ont.—Pig iron producers have received orders for only a few hundred tons for delivery to the end of March. Spot sales during the past week amounted to about 300 tons. The daily melt is approximately at 25 per cent of capacity. Prices are steady.

Ferroalloy Releases Brisker in Middle West

Ferroalloy Prices, Page 56

Chicago—Releases of ferroalloys have picked up appreciably in the last few days, due to buyers' low stocks. Less-carload specifications have been numerous. Ford Motor Co. has released some business on old contracts.

New York—Demand for ferromanganese is quiet and prices are unchanged at $75, duty paid. Domestic spiegeleisen is $27, furnace.

Pittsburgh—Shipments of ferromanganese and spiegeleisen are only slightly heavier than in early January, the improvement so far this year being less than seasonal. Spot buying is dull with prices unchanged for small lots at $75 for ferromanganese and $27 for spiegeleisen. Specifications for other ferroalloys are quiet and unchanged with prices steady.

Buy Radio City Elevators

New York—Westinghouse Electric Elevator Co. has been awarded 76 elevators, requiring 1000 tons of special shapes, cable and other steel, for the Rockefeller Radio City project here. The Otis Elevator Co. was recently awarded 26 elevators, which it will build at its Yonkers, N. Y., plant.

Hoover To See Scrap Men

President Hoover will meet delegates to the annual convention of the Institute of Scrap Iron and Steel, at the White House at 12:30 p. m., March 9. It is expected that several problems of the iron and steel scrap industry affecting conservation of iron ore will be discussed.

Scrap

Little Activity With Prices at Fairly Stable Level—Offerings Continue at Light Rate

Chicago—While strength has developed in several iron and steel scrap grades, two small sales of heavy melting steel have been made at $7.25, or 25 cents under the recent market. Most dealers still are reluctant to show a decline in asking prices for steelmaking grades. Cast borings are up 50 to 75 cents, as one of the three consumers in this area, all of which have been out of the market for many months, has been negotiating, and shipments are continuing to the East Chicago docks for movement eastward by lake boat during the navigation season. Scarcity exists also in broken and sawed rail ends, for which dealers are asking $10.25, gross delivered. Recent moderate gains in steelworks operations have brought a more optimistic

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	7.00 to 7.50
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.75
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	8.75 to 9.25

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.25 to 5.75
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.25
Valleys	8.00 to 8.50

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.25 to 6.75
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	9.00 to 9.50
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	9.00 to 9.50
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	12.00 to 12.50
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.00 to 8.50
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.50 to 5.00
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.50 to 9.00
Eastern Pa.	8.50 to 9.50
Pittsburgh	10.50 to 11.50
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.75 to 8.25
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	7.00 to 7.50
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	7.00 to 7.50
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	6.25 to 6.50
Buffalo, No. 2	8.00 to 8.25
Chicago, No. 1	7.25 to 7.85
Chicago, No. 2	7.00 to 7.50
Cinci., No. 2	6.75 to 7.25
Eastern Pa.	9.00
N. Y., No. 1, deal.	6.00 to 6.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	5.00 to 5.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.00 to 6.50
Val. new No. 1	8.25 to 8.75

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.00
Chicago	4.25 to 4.75
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.25 to 3.75
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.50 to 3.00
Valleys	6.25 to 6.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, deal.	1.05 to 1.55
Buffalo	5.75 to 6.25
Chicago	4.25 to 4.75
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	7.85 to 8.40
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	11.75 to 12.30
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.85 to 8.40
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.50 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	8.50 to 9.00
E. Pa. iron	10.00 to 11.00
Pitts. iron	10.00 to 10.50
Pitts., steel	10.50 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	8.00 to 9.00
Buffalo (Mach.)	9.25 to 9.75
Boston, textile	7.00 to 8.50
Chicago, mach.	8.90 to 9.50
Chi., railroad	7.55 to 8.10
Chicago, agri.	7.00 to 7.55
Cinn., mach. cup., gross	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.00 to 11.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break.	5.50 to 6.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.50 to 9.00
Buffalo	9.50 to 10.00
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	7.00 to 7.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.50 to 11.25
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.00
Chicago	10.00 to 10.50
Eastern Pa.	10.00 to 10.50
New York	6.25 to 6.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	11.00
Pittsburgh	11.00 to 11.50

tone, but sales have lapsed from the moderate activity late last month.

Quartermaster, Rock Island, Ill., arsenal, will sell 950 tons of wrought iron and steel scrap Feb. 16.

Boston—Scrap is slightly more active, but prices while steadier, show few signs of advance. Several small lots of No. 1 and 2 steel have moved to central Massachusetts, the former unchanged at $6.50, delivered, while $5.75, delivered, is reported paid for No. 2 on a fair-sized shipment. Dealers bid $5 for textile, $4.50 for heavy breakable and $3.25 to $3.70 for No. 2 for outside shipment.

New York—No. 1 steel for barge storage continues to command $5.50, reports of $5.25 being denied. Buying is much lighter than before the shipping season closed. Scrap shipments are small, some mills holding up delivery. Prices are generally unchanged and somewhat steadier.

Philadelphia—Further reductions have been made in prices of steel and iron scrap, though largely nominal. Bethlehem Steel Co. is still holding up shipments to Lackawanna and Sparrows Point plants. Buying is slow but some heavy melting steel has been bought for Johnstown, Pa., at $9, delivered on local and $9.75 for outside material. Heavy melting steel in this district now is $7 to $7.75, delivered.

Buffalo—Small purchases of stove plate have been made at $8 but otherwise the local market is without activity. The price trend is irregularly lower on specialties.

Pittsburgh — The iron and steel scrap market has quieted, with no important sales of heavy melting steel noted since relatively heavy buying a week ago. The market is unchanged at $10 to $10.50, with hydraulic compressed sheets quoted $9.75 to $10.25. A moderate sale of this grade was made recently at $10.25. Scrap is coming out slowly and quotations are fairly steady despite the quietness in new business. Shipments against old orders of heavy melting steel continue restricted to several mills.

Cleveland—Local consumers of blast furnace iron and steel scrap are taking small shipments for storage and shipments of heavy steel continue to an important consumer here in completion of contracts. Quotations have not changed in any particular in the week.

Prices in the valleys are weaker and have declined about 25 cents per ton.

Detroit — Following recent advances, steel and iron scrap markets displayed no price changes last week although no weakness has developed.

Cincinnati—Recent sales of scrap were confined chiefly to No. 2 steel, sheet clippings and blast furnace material, affirming present quotations.

Birmingham, Ala. — Heavy melting steel is moving slowly. No. 1 cast and a little stove plate have been in demand but all business is at low ebb.

St. Louis—Iron and steel scrap has developed no change and prices remain unchanged at or about the lowest levels of the present recessionary movement. In most grades the market is nominal.

Toronto, Ont.—Trading in iron and steel scrap continues dull. Consumers hold purchases to spot needs. Steel scrap is at a standstill, while machinery cast, wrought and stove plate are spotty and other grades quiet. Dealers are still out of the market and have made no price revisions.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Would Cut Chicago Rail Rates To Meet Competition

Chicago—Western railroads have filed notice with the interstate commerce commission seeking a revision of railroad freight rates on finished steel between Chicago and St. Paul and Duluth to meet water and truck competition. With recent advances, the rate from Chicago to St. Paul is 43 cents per 100 pounds, and to Duluth 46 cents. Truck shipments from Chicago to these points amount to about 30 cents, and water rates are slightly lower. The aim of the present plea is to obtain a 30-cent rate to St. Paul, and a rate of 33 cents to Duluth.

Coke

Beehive Fuel in Lighter Demand—Foundries Buying Slowly—Prices of All Grades Easy

COKE PRICES, PAGE 56

Pittsburgh—Beehive coke demand is off slightly. Foundry operations lack improvement and melters who replenished their stocks recently now are out of the market. Consumers of furnace coke also show no gain in their operations while heating fuel continues in poor demand. Prices are easy, with furnace coke usually $2.25 and the foundry grades $3.25 to $4.50.

New York—Metallurgical coke demand shows slight improvement, with prices generally unchanged. Beehive furnace coke is easy at $2, Connellsville. Beehive foundry coke is $3 to $3.25, Connellsville, for standard brands and $4.50 Latrobe, Pa., for premium brands. By-product foundry coke is $8.76 to $9.16, delivered, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Little change is noted in demand for by-product foundry coke. Consumers cover immediate needs by spot buying. Quotations are unchanged.

St. Louis—Demand for metallurgical coke is sluggish. Foundries are specifying only sufficient tonnages to carry on from week to week, and new orders are small. Steel mills are well supplied with coke, and are not expected in the market for some weeks. Prices are steady.

Birmingham, Ala. — Coke production is a little better than 50 per cent of capacity. Larger consumers are carrying usual amount of stock. Shipments are less than output.

Chicago — January by-product foundry coke shipments were about 10 per cent over December. Oven interests feel certain of even further gains this month. Chicago oven quotation is $7.50. For delivery in the Chicago switching district, the price is 75 cents higher, plus 6 cents freight surcharge.

Germany in 1931 imported 27 per cent less iron and steel than in 1930 and exported 19.6 per cent less.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¼	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 41.40 to 43.40
Six to 24-inch, Chicago..... 38.40 to 40.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.25c
Buffalo	3.00c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.25c
Buffalo	3.15c
Chattanooga..	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia..	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.25c
Buffalo	2.95c
Chattanooga..	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl...	2.50c
Los Ang. lcl..	2.80c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia..	2.45c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.40c
New York(d)	3.30c
Philadelphia..	2.45c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga..	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga..	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga..	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.50c
San. Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c
Buffalo	3.35c
Chattanooga..	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia..	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia..	3.00c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)..	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)..	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.87½
Copper, hot rolled	15.87½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.12½
Seamless copper	15.37½
Rods	
Yellow brass (high, full turnings)	10.62½
Naval brass	11.75
Anodes	
Copper untrimmed	12.75
Wire	
Yellow brass (high)	12.87½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.00 to 4.25
Chicago	3.25 to 3.50
Cleveland	3.75 to 4.25
St. Louis	3.50
Heavy Yellow Brass	
New York	2.50 to 2.75
Heavy Copper and Wire	
New York	5.00 to 5.25
Boston	5.00 to 5.25
Chicago	3.62½ to 3.87½
Cleveland	4.25 to 4.75
St. Louis	3.75
Composition Brass Borings	
New York	3.75 to 4.00
Yellow Brass Tubing	
Cleveland	2.25 to 2.75
Light Copper	
New York	4.00 to 4.25
Chicago	3.12½ to 3.37½
Cleveland	3.50 to 4.00
St. Louis	3.50
Light Brass	
Boston	1.75 to 2.00
Chicago	2.00 to 2.25
Cleveland	1.50 to 2.00
St. Louis	2.00
Lead	
St. Louis	2.50
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.25
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12	8.50 to 9.50
Brass ingots, 85-5-5-5	6.87½

Metals

Copper and Zinc Weaken with Latter at New Low—Lead Less Active—Tin Market Dull

New York—Both copper and zinc eased off last week with the latter at a new record low for all time. Lead remained steady, while fluctuation in tin was comparatively slight. Demand for all metals was dull.

Copper — Domestic buying last week was almost entirely lacking despite the fact that the metal was available from custom smelters at 6.25c, Connecticut. Resales were made at as low as 6.00c. Metal was offered for delivery abroad at a new record low of 6.87½c. Mine producers asked 6.75c for domestic delivery. Copper wire, brass and copper products and brass ingot all eased off in sympathy with the decline in virgin metal. The automotive industry continues the most promising outlet for copper and brass and other alloys.

Lead—Sales were less active than recently but enough business was transacted to assure market firmness. Shading, however, is reported to have been done on special lots for Midwest delivery. Stocks at plants of refiners and smelters have reached a new high level.

Zinc—Lack of active buying forced prime western zinc to a new low price of 2.80c, East St. Louis. Sales were mostly for spot needs. Needs of galvanizers for the next few weeks are expected to be light.

Tin—Resales continued to rule the market last week with future positions entirely nominal. Only slight business was done although the general level of prices was above the level of the preceding week. Sellers were well supplied with metal. World visible supply declined slightly in January.

Antimony — The expectation that imports from Shanghai might be cut off brought a sharp advance in the metal through the middle of the week. Speculators and consumers were actively in the market. Prices eased later in the week with the resumption of recent dull demand.

Silver—Prices were stronger, early in the week but eased as the period closed.

Aluminum — Prices continued to hold, with buying light.

Distillate Prices Firm On Light Production

New York — Benzol demand is light. Toluol and xylol are fairly active with indications of a better demand within the next two months. Production continues below normal exerting a firm influence on prices. Spot business in phenol and naphthalene is light, but shipments against contracts are gradually increasing. Chain stores are specifying naphthalene in good volume. Sulphate of ammonia is dull and weak, imported material being offered $2 under domestic quotations at dock.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Demand Slow

New York—Quicksilver demand is slow and prices little changed from those of a week ago at $64 to $66, a virgin flask of 76 pounds on spot delivery. While most orders of the psat week have been in small lots, one or two fairly large lots have been purchased at $64.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot	Nickel Ingot
January 30	7.00	7.62½	6.75	21.70	22.05	3.75	3.55	2.90	22.90	5.95	35.00
February 1	6.75	7.62½	6.50	22.10	22.65	3.75	3.55	2.85	22.90	6.25	35.00
February 2	6.75	6.87½	6.50	22.25	22.75	3.75	3.55	2.82½	22.90	7.12½	35.00
February 3	6.50	6.87½	6.25	21.87½	22.40	3.75	3.55	2.80	22.90	7.12½	35.00
February 4	6.50	6.87½	6.25	22.00	22.55	3.75	3.55	2.80	22.90	6.75	35.00
February 5	6.37½	6.62½	6.25	22.00	22.55	3.75	3.55	2.80	22.90	6.75	35.00

Europe

Delay in Imposing Tariff Holds Back Activity—Some Railroad Tonnage Sold—Continent Dull

London—(*By Cable*)—Steel markets have been dull, awaiting imposition of the 10 per cent import tariff. Depression in the building trade is reflected in lack of orders on books of steel mills. Pig iron prices are unchanged but an increase in the price of coke is causing some anxiety to pig iron makers.

Dorman Long & Co. have booked an order for 1000 tons of tramrails for shipment to Montreal, Que., and some domestic railroad contracts have been placed in the Barrow district. Improvement noted recently in demand for galvanized sheets is being maintained. Tin plate activity is moderate.

Reports from Berlin are that trade conditions are unfavorable. Domestic consumers are being granted a rebate in return for a pledge not to buy foreign steel. Markets in France and Belgium are reported quiet.

Pacific Coast

Prospective Tonnages Slow To Close—Are Moderate Size

Seattle—Except for federal and other public projects, little is coming up to require steel tonnages. Most local interest is in consideration of bids for 1811 tons of structurals and 746 tons of reinforcing steel for approaches and remodeling of the University bridge in Seattle.

Prices are unchanged and untested in the present lethargic market. General Construction Co. has started work on the Prosser powerhouse of the Yakima reclamation project, 160 tons of steel. King Bros., Portland, Oreg., are fabricating 230 tons of plates into 28-inch pipeline for an irrigation project at Wenatchee, Wash. Shapes for the Portland federal building, 2000 tons, have been placed.

Steel warehouse turnover has been about the same in January as in December, with prospects for some increase as spring approaches. Stocks generally are low and will need replenishing soon.

Pacific Northwest Public Service Co., operating the street railway system at Portland, Oreg., has ordered 15 new cars, to cost $250,000. The company's agreement calls for expenditure of $2,000,000 in four years if its franchise is approved by voters May 20.

Public Projects Lead

San Francisco—(*By Air Mail*)—Buying activities are not yet under way, though some moderate awards have been made. New projects seemingly close to closing form an encouraging feature. The largest tonnage is 950 tons of structurals for pier sheds at Los Angeles, booked by the McClintic Marshall Corp.

Pacific Coast Steel Corp. has taken a subcontract for 326 tons of reinforcing bars for highway work in Los Angeles county, Calif., and 292 tons for Orange county. Soule Steel Co. has taken 715 tons for hospital buildings for the United States at Yountville, Calif. Gunn, Carle & Co. have booked 100 tons for a wharf for the El Dorado Oil Co. at Oakland, Calif. California Institute of Technology is inquiring for 250 tons for a building at Pasadena, Calif.

Plate sales have been unimportant but 1000 tons for a gas holder at the dirigible base at Sunnyvale, Calif., has been awarded to Stacey Mfg. Co., Cincinnati, low bidder, and 100 tons for a tank and tower for the same location, to the Pittsburgh-Des Moines Steel Co., Pittsburgh. Los Angeles Mfg. Co. is low bidder on 850 tons of plates for an 18 and 20-inch welded pipe line for Signal Hill, Calif.

New inquiry includes 300 tons for a bridge over Russian river, Geyersville, Calif., 175 tons for an extension to a pier in Oakland, Calif., and 140 tons for a bridge in Santa Barbara county, Calif.

American Cast Iron Pipe Co. is low bidder on cast iron pipe estimated at 2400 tons for Signal Hill, Calif. Pending pipe business is slow to come out and relatively little is in prospect.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Feb. 4

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$10.12	2 18 6	$ 9.96 to $10.45	2 1 0 to 2 3 0
Basic bessemer	9.69	2 16 0*	9.48 to 9.72	1 19 0 to 2 0 0
Hematite, Phos. .03-.05	11.25	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.60	5 7 6	$11.66 to $11.91	2 8 0 to 2 9 0
Wire rods, No. 5 gage	29.41	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$28.55	8 5 0	$28.55	5 17 6
Merchant bars	1.08c	7 0 0	.59c to .61c	2 14 0 to 2 15 0
Structural shapes	1.19c	7 15 0	.56c to .57c	2 11 0 to 2 12 0
Plates, †¼ in. or 5mm	1.34c	8 15 0	.70c to .72c	3 4 0 to 3 5 0
Sheets, black, 24 gage or 0.5 mm.	1.34c	8 15 0	1.46c to 1.49c	6 12 6 to 6 15 0
Sheets, gal., 24 gage, corr.	1.46c	9 10 0	1.54c	7 0 0
Bands and strips	1.46c	9 10 0	.83c to .85c	3 15 0 to 3 17 6
Plain wire, base	1.31c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.69c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.69c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.51	0 14 6	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.12	2 18 6	$ 9.46	240	$10.32	370	$16.39	69
Basic bessemer pig iron	9.69	2 16 0*	.....	.....	9.21	330	17.93	75.50
Furnace coke	2.16	0 12 6	5.71	145	4.46	160	5.08	21.40
Billets	18.60	5 7 6	14.18	360	11.58	415	23.63	99.50
Standard rails	1.27c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.08c	7 0 0	.90c	500	.66c	510	1.24c	115
Structural shapes	1.34c	8 15 0	.99c	550	.65c	500	1.22c	112.50
Plates, †¼-in. or 5mm.	1.39c	9 0 0	1.17c	650	.77c	590	1.43c	132
Sheets, black, 24 ga. or 0.5mm.	1.34c	8 15 0§	1.33c	740‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5mm	1.41c	9 2 6	2.43c	1,350	1.95c	1,500	4.00c	370
Plain wire	1.31c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.46c	9 10 0	.96c	535	.98c	750	1.44c	133

*Basic. †British ship-plates Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Machinery

SENTIMENT varies as to the outlook in the metalworking equipment market. Although Chicago dealers believe demand to be better in the East, the report from Worcester by no means bears out this belief. However, a note of optimism is sounded in the New York territory, where some immediate prospects have appeared and where further possibilities are recognized. The fact of the matter is that a comparatively small order for equipment makes all the difference between gloom and hope under existing conditions. The opinion is general that the change in Ford production plans temporarily has delayed a considerable amount of business.

New York—Machine tool inquiry is slightly improved, although sales still are slow and are limited to one or two individual units at a time. More business is being figured, however, a good part of which is expected to develop into orders later. Sentiment is conservatively better and, while improvement is spotty, most dealers and builders are more optimistic.

Although railroads generally are buying few tools, New York, New Haven & Hartford recently sought bids on three items, including a grinder, a cutter grinder and a welding unit. A Pennsylvania automobile engine builder is reported to be in the market for a battery of grinding machines.

Navy department continues to buy for eastern yards but is slow to close. Some equipment on which bids were taken last fall still is pending. Among a dozen tools on which bids now are being asked is a shear for Brooklyn and several lathes for New York.

Worcester, Mass.—Inquiry sagged decidedly during the week, the mild impulse which came with the new year having faded out almost entirely. A government inquiry covering six lathes for Portsmouth navy yard and another including a 16-inch lathe for Philadelphia are the primary objectives in the present market.

Outside of some additional orders of rather small size from Ford Motor Co., the grinder business is quiet. Some of the promising inquiries, noted in previous reports, seem to have become dormant.

Generally the automotive trade is not yet proving to be much of a factor in the machinery market. There is a possibility, however, that once Ford makes known his plans, others will release some substantial equipment orders.

Pittsburgh—Machine tool users generally are not inclined to make purchases and sales continue slow. Inquiry also lacks improvement while pending work shows little if any change for the better.

Tool sellers are hopeful for some improvement in demand from railroads but look for only small buying over the next several months. Purchases by steel companies are light. No new buying is appearing from the Westinghouse Electric & Mfg. Co.

Cleveland—While employment in the metalworking industries in this district is reported to be up to some degree, several builders of machinery register disappointment in the failure of the new year to bring more distinct recovery.

On the other hand, certain other companies which have released annual reports in the past few days, sound notes of encouragement. Among these is Foote-Burt Co. which reports mild improvement since the first of the year, also an excellent cash position.

Arthur G. McKee & Co. reports greater earnings for 1931 than for 1930 or 1929. While design work on large iron and steel projects in Soviet Russia will be completed in the near future, this company's supervisory work over the Russian projects will continue. Construction contracts in Germany, Italy and Canada have been secured recently.

Motch & Merryweather Machinery Co., Cleveland, was the successful bidder on a contract covering two drill presses for Wright Field. These machines will be delivered by a Cincinnati builder.

Chicago—Nothing of immediate promise is in sight in the machine tool market. Inquiry for small tools, which recently picked up in this district, affords the only bright spot.

While obviously many needs are to be filled, only purchases of utmost necessity are likely to be made as long as general industrial activity continues to drift as in recent months. Outside of a half dozen small inquiries, no regular lists are before the market at this time.

It is indicated that the eastern markets now have more of promise than in this territory. A large amount of used tools continues to come into the market.

Here and There in Industry

(*Concluded from Page 25*)

president, and H. C. Stevenson secretary and treasurer. Ernst Ohnell, T. A. Yawkey and these officers form the board of directors.

□ □ □

Cincinnati Milling Machine Co., Cincinnati, manufacturer of milling and grinding machines, has established direct sales representation in the Pittsburgh district like that already available at Detroit, Cleveland, Chicago and Cincinnati. Field technical service will be available for users of the company's tools.

□ □ □

Goldsmith Bros. Smelting & Refining Co., Chicago, has moved its offices from 29 East Madison street to the Keener building, Wabash avenue and Madison street.

□ □ □

Reed & Prince Mfg. Co., Worcester, Mass., has been licensed by the Dardelet Threadlock Corp., New York, to manufacture bolts, nuts and screws threaded with the Dardelet self-locking thread.

□ □ □

E. D. Giberson & Co. have consolidated offices at their warehouse, foot of Forty-fifth street, Brooklyn, N. Y., and E. D. Giberson now has headquarters there instead of at 90 West street, New York. The company does a warehouse business, specializing in iron and steel tubular products.

□ □ □

Sterling Wheelbarrow Co., Milwaukee, has moved its New England office from 141 Milk street, Boston, to the Stearns building, 293 Bridge street, Springfield, Mass. Ray Hunter is manager.

□ □ □

Automatic Transportation Co. Inc., Buffalo, has appointed C. B. Crockett and R. L. Smith its eastern general sales agents, with sales and engineering offices in New York. District offices will be maintained at Boston, Hartford, Conn., Newark, N. J., Philadelphia, Pittsburgh, Baltimore and Charlotte, N. C. Mr. Crockett formerly was executive secretary of the Industrial Truck association, New York, and Mr. Smith was connected with the Elwell-Parker Co., Cleveland.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

NEW BEDFORD, MASS.—American Flexible Conduit Co. Inc. has been incorporated with $50,000 capital to manufacture armored cable, electric equipment and accessories, by J. H. Abrahams and associates.

New York

JAMESTOWN — Crescent Tool Co., Foote avenue and Harrison street, manufacturer of small tools, will build a 1-story addition to cost about $25,000.

Pennsylvania

KENNETT SQUARE—Good Roads Machinery Corp. has been incorporated with 50 shares no par value to manufacture, sell and lease machinery and equipment for road building, by Carl W. Funk, 3127 Queen lane, Philadelphia.

PHILADELPHIA—Rokap Corp. has been incorporated with $10,000 capital to manufacture machinery and appliances for clothing manufacture, by Allen Kaplan, 1522 Lindley avenue, Philadelphia.

PITTSBURGH—Accounting Machine Corp. has been incorporated with $10,000 capital to manufacture and distribute accounting and office machinery and supplies, by Joseph G. Profeta, 5615 Pocusset street, Pittsburgh.

PITTSBURGH — General Appliance Supply Co. has been incorporated with $5000 capital to manufacture electrical appliances, by W. W. Habel, 148 Brightwood avenue, West View, Pa.

ROSEMONT—Derham Custom Body Co. has been incorporated with $25,000 capital to manufacture automotive bodies, parts and accessories, by Enos J. Derham, Rosemond, Pa.

SHARON—Vigilant Mfg. Co. has been incorporated with $5000 capital to manufacture metal products, electrical and mechanical devices, by Emrys G. Francis, 58 East State street, Sharon, Pa.

Michigan

DEARBORN—Miller Metal Products Inc. has been incorporated with $5000 capital and 10,000 shares no par value to conduct a general steel and iron manufacturing and supply business.

Southern States

NEW ORLEANS, LA.—Auto Maintenance & Brake Service has been incorporated by Robert A. Schroeder, president, 4222 Palmyra street, to establish and operate automotive repair shops.

Oklahoma

COMMERCE—Eagle Picher Lead Co. has let contracts for construction of an ore mill here at a cost of about $500,000 to serve as concentration plant for this territory.

OKLAHOMA CITY—Secor & James, Hales building, have been given contract to build airplane hangar, 120 x 120 feet, at the municipal airport, to cost $25,000.

OKLAHOMA CITY — Wylie-Stewart Machinery Co., 729 West Noble street, has let a contract for a warehouse building, 50 x 110 feet, to include facilities for repair of construction machinery.

TULSA, OKLA. — Transcontinental Golden Eagle Lines, bus line Chicago to Los Angeles, plans to build repair shops and maintenance headquarters at Tulsa. Grover C. Jacobsen, 1428 East Fourth street, is president.

TULSA, OKLA.—Tulsa Gas Engine & Machine Co. has been organized to do general machine work and manufacture oilfield tools. A. L. Hanoch, formerly of the mechanical department of the Tidal Oil Co., is president, H. A. Henley general manager and J. B. Henley shop superintendent. A shop, 54 x 140 feet, has been leased at 421 North Cincinnati street.

Texas

HOUSTON—Continental Can Co., New York, has bought a site on the ship channel and will build a manufacturing plant to cost $400,000.

HOUSTON—Stewart Roofing & Sheet Metal Works has started business at 2614 Leeland street. Frank C. Stewart is owner.

LONGVIEW—Lion Tool & Supply Co. has been incorporated with $30,000 capital by Harry O. Lown, president and general manager.

Wisconsin

RACINE—Frank J. Hoffman, architect, Janes block, is drawing plans for the third unit of the vocational school at 800 Center street, to cost about $175,000.

Minnesota

BRAINERD—Ivar Gustafson, Fourth street, is building a 1-story machine shop.

DULUTH—Bids will be received until Feb. 10 by F. W. Johnson, city purchasing agent, for five pumping units for the water and light department at the Lakewood pumping station.

DULUTH—Bids will be taken soon by the city clerk for construction of a chlorination plant and disposal basin to cost about $735,000. John W. Wilson is city engineer and Alvord, Burdick & Howson, 20 North Wacker drive, Chicago, consulting engineers.

SUPERIOR—Berwind Fuel Co., St. Louis Bay, is building a screening plant at its coal dock here, to cost about $25,000.

SUPERIOR—Polaris Concrete Products Co., West Duluth, Minn., is building a concrete pipe manufacturing plant at Hammond avenue and Twenty-eighth street, Superior.

South Dakota

MITCHELL—Plans are being made for a disposal plant to cost $200,000. H. L. Caldwell, Jacksonville, Ill., is consulting engineer.

SIOUX FALLS—General Manganese Corp., Detroit, will start construction soon of the first unit of a ten-unit refining plant, the unit to cost about $270,000.

Nebraska

LINCOLN—Bids will be received until Feb. 10 by Theodore H. Berg, city clerk, for a steam turbine driven pumping unit for the municipal water and light plant, to cost about $45,000.

Idaho

COEUR D'ALENE—A bond issue of $650,000 has been approved by citizens to finance a power and water system.

Pacific Coast

BEND, OREG.—Great Northern has awarded a contract to A. Guthrie & Co., Portland, Oreg., for construction of engine house and machine shops to cost about $50,000.

SEATTLE — M. F. Buckman, 650 Broad street, is having his machine shop enlarged and improved, contract to Zenith Construction Co.

SEATTLE—Power Plant Engineering Co. has been incorporated with $5000 capital by E. S. Cairns and associates. Bronson, Jones & Bronson, Colman building, are attorneys.

Dominion of Canada

WINNIPEG, MAN.—Dominion Bridge Co., S. W. Campbell vice president, has completed plans and bought a site for an addition to its plant here when business conditions warrant construction.

HAMILTON, ONT.—Hamilton Clamp & Stamping Works, 62 Ashley street, will build a 1-story plant addition for which equipment will be bought.

FORT WILLIAM, ONT.—Delamater & Milligan Ltd. has been incorporated with $40,000 capital to manufacture airplanes, by Harry I. Delameter, Port William, Ont.

OTTAWA, ONT.—Campbell Motors Ottawa Ltd. has been incorporated with $100,000 capital by Stanley M. Clark, Ottawa, Ont.

TORONTO, ONT.—Kellogg Mfg. Co., Rochester, N. Y., has leased the prem-

ises at 579 Richmond street West and will install equipment for the manufacture of compressors, paint spraying equipment and similar products.

TORONTO, ONT.—Wiremould Co. of Canada Ltd. has been incorporated with 40,000 shares no par value to manufacture electrical machinery and appliances, by Samuel C. Wood, Toronto, Ont.

TORONTO, ONT.—Lever Bros. Ltd., Eastern avenue, has had plans prepared by Darling & Pearson, 2 Leader lane, architects, for a plant addition. Bids are being taken. Cost estimated at $100,000.

TORONTO, ONT.—John C. Virden Co., Cleveland, manufacturer of electric lighting fixtures, has taken factory space in the Beardmore building, 37 Front street East, and will equip for manufacturing purposes. J. M. Ehrlich will be in charge.

WALKERVILLE, ONT. — National Specialties Ltd. has been incorporated with $40,000 capital to operate an electroplating and machine shop, by Walter J. Hock, Detroit, Mich.

LACHINE, QUE.—Jenkins Bros. Ltd., Montreal, Que., has completed its first unit of a $2,000,000 plant here, to be used as foundry and power house. A machine shop unit will be erected next.

MONTREAL, QUE.—Atlas Construction Co. has submitted the lowest bid for construction of a pumping station at foot of Atwater avenue, at $580,705. Equipment will be purchased for this plant. J. E. Gauthier, city hall, is clerk.

New Trade Publications

ALUMINUM PAINT—Aluminum Industries Inc., Cincinnati, has issued a folder describing its type of aluminum coating for finishing products or use about an industrial plant.

DUST COLLECTING—A description and illustration of a system of collecting dust is included in two publications recently issued by the Allington & Curtis Mfg. Co., Saginaw, Mich.

WELDING EQUIPMENT — Welders Supply & Mfg. Co., Cincinnati, has issued a catalog, No. 32, covering its lines of welding and cutting equipment.

BRONZE ALLOYS—Barry Bronze Bearing Co., Seventh and Bulson streets, Camden, N. J., has prepared a bulletin listing the various types of alloys which it manufactures and indicating the advantages of each.

ELECTRICAL EQUIPMENT — General Electric Co., Schenectady, N. Y., has issued bulletins, as follows: Floodlighting for outdoor construction, No. 1505; magnetic switch, No. 841B; Fabroil gears and gear blanks, No. 1236A.

ANTI-FREEZE AIRLINE SYSTEM —Sullivan Machinery Co., 400 North Michigan avenue, Chicago, in Bulletin No. 100-C illustrates the use of Tanner tanks and tannergas in operating air compressors and pneumatic tools in low temperatures.

ALUMINUM FINISHES—Aluminum Co. of America, Pittsburgh, describes in a current bulletin various finishes for aluminum alloy and castings. The finishes described are the standard types which have proved to have the desired permanency.

AUTOMATIC PUMPS—Electric Controller & Mfg. Co., Cleveland, has issued a bulletin on its automatic control for pumps to maintain a liquid level or pressure within close limits, with economy of power. Diagrams show typical layouts and advantages are described.

DIE CASTING—A leaflet by the Allied Die-Casting Corp., Forty-third avenue and Thirty-eighth street, Long Island City, N. Y., contains a table of physical properties of various alloys and metals and a presentation of a variety of uses of die castings.

HARDNESS TESTERS—R. Y. Ferner Co., Investment building, Washington, is distributing catalog No. H-1, describing two types of portable hardness testers, a pendulum type and a brinell press, each adapted to shop use for quick testing of materials.

INDUSTRIAL CARS—Atlas Car & Mfg. Co., Cleveland, in Bulletin No. 1240 covers its industrial car equipment, including various special types of cars, turntables, buckets, trucks and trailers, foundry equipment, locomotives, coke oven equipment, track and switches.

RECUPERATORS — Duraloy Co., Twenty-sixth street, Pittsburgh, south side, has issued Bulletin No. 3114 on heat-resisting recuperators. It contains much information to users of furnace recuperators where high temperatures are involved.

TRAMRAIL—Tramrail for movement of buckets where it is necessary to use them in industry is discussed and illustrated in a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O.

CASTINGS—A book issued by Link-Belt Co., Chicago, from its Indianapolis branch is devoted to castings of its Promal metal, originally developed for the company's own use in the manufacture of conveyor and power-transmission chains. Various uses for this metal in a wide range of industry are shown.

OIL BURNERS—Enterprise Oil Burner Co., San Francisco, has issued Catalog No. 32, in which controlled combustion of fuel oil is described with reference to diagrams and phantoms of the company's devices. Fuel costs, installation of burners and a full presentation of various types are also included.

PIPING AND VALVES—Semet-Solvay Engineering Corp., 40 Rector street, New York, in Bulletin No. 44 shows the varied possibilities in the manufacture of pipe of many sections and sizes, true to specifications, sleeve joints, fianges, expansion joints and a wide variety of valves.

VALVES—Haydenville Co., Haydenville, Mass., has illustrated and described its lubricated air cocks in a recent bulletin. This cock has an oil pocket in the spindle with outlets so located that each time the unit is operated, enough lubricant is passed to the two oil grooves to prevent freezing or sticking.

WELDING EQUIPMENT — Bastian-Blessing Co., 240 East Ontario street, Chicago, in Catalog No. 57, pocket size, indexed, lists specifications and prices of all types of its welding and cutting equipment and accessories. Special matter to aid in choice of equipment for special uses is included.

BUILDINGS—Questions that should be answered before building any type of industrial plant are presented in a folder by the Austin Co., Cleveland. The publication points out that engineers of that company are prepared to assist in the solution not only of the 101 questions listed but many others which may arise in constructing any building.

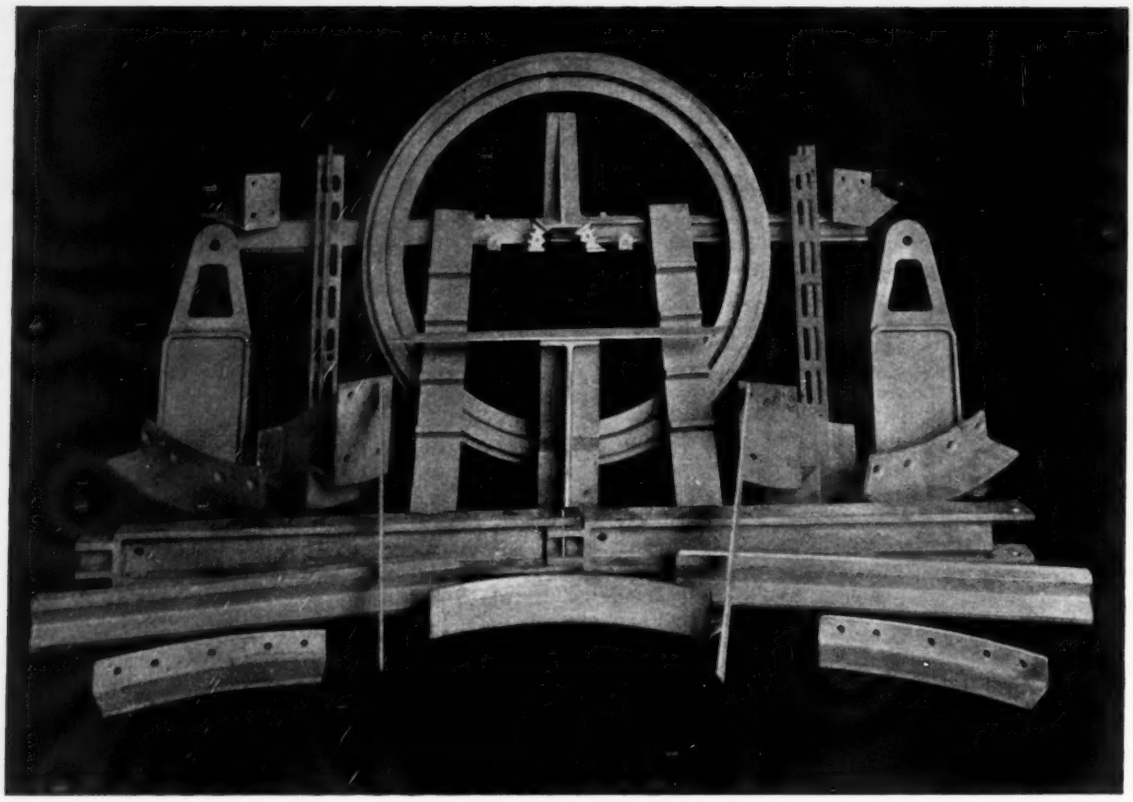
STEAM EQUIPMENT — American District Steam Co., North Tonawanda, N. Y., has issued a catalog covering its line of slip-type and packless expansion joints, steam conduit, insulation and accessories, meters, water heaters, traps, separators, strainers and allied accessories for underground steam and hot water lines.

WELDING—Lincoln Electric Co., in Application Sheet No. 26, series 2, illustrates proper methods of welding for bearings. The same company has issued Plate 30 in its series on structural arc welding. It is devoted to arc-welded mill buildings and is well illustrated to show various features of such construction.

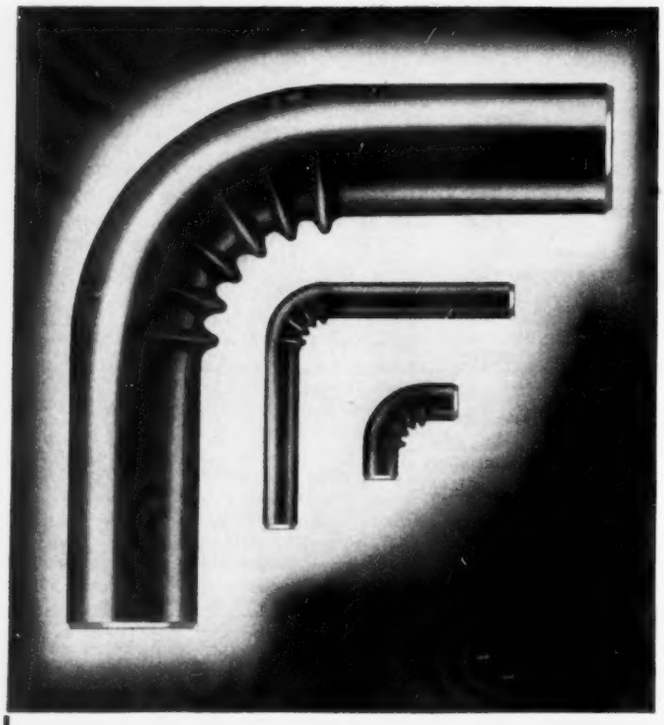
PORTABLE SANDER—Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, has prepared a bulletin describing a new portable, continuous belt sander recently developed. Specifications and features of the new sander are included and illustrations show the main features of design. A safety balancer for suspending, balancing and lifting portable tools or objects weighing from 10 to 150 pounds also is described.

THERMOSTATIC RADIATOR VALVE—Powers Regulator Co., 2720 Greenview avenue, Chicago, is distributing its bulletin No. 260, describing an automatic control of direct, indirect and concealed radiation. The unit consists of a self-operating regulator designed for vacuum or vapor steam heating systems. Various applications of the thermostatic valve are illustrated including the use on small recirculating unit heaters.

WELDING AND CUTTING EQUIPMENT—Bastian-Blessing Co., 240 East Ontario street, Chicago, in catalog No. 57 lists specifications of all types of welding and cutting torches, regulators, gas economizers, acetylene generators and other accessories. Each piece of equipment is described in detail and the various uses are listed. Chapters on how to make a special outfit, how to choose a torch, and "Regulators Make the Outfit" are included.



"Chromax" Furnace Parts
made by
DRIVER-HARRIS COMPANY, HARRISON, N. J.



CREASED TURNS

Creased Turns are made in all sizes up to 24" and to any desired angle, with radii equal to 1½, 2, 2½ times the nominal pipe diameter.

Tangents may be of any length thus removing line welds from the location of compound stresses due to expansion.

Increased flexibility resulting in decreased anchor forces is obtained.

Write for additional information.

Patented U. S. Letters— No. 1617277 1740524.

PITTSBURGH PIPING AND EQUIPMENT CO.
43RD ST. & A.V.R.R. PITTSBURGH, PA.

P P & E Co

BRANCH OFFICES
Indianapolis, New York
San Francisco, Chicago
Cleveland, Detroit
Houghton, Mich., Boston